Whose nature counts in natural resource management? A study of a wetland fishery in southern Thailand

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WHOSE 'NATURE' COUNTS IN NATURAL RESOURCE MANAGEMENT? A STUDY OF A WETLAND FISHERY IN SOUTHERN THAILAND

submitted by
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CONTENTS

ABSTRACT

This thesis deals with processes of negotiation and conflict in natural resource management policy. It argues that the human dimensions of ecology are poorly understood, and thus presents a model of a 'people-centred ecology'. This model takes immediate resource users as its starting point and draws on cultural understandings of the environment as well as the socio-economic arenas in which people operate. In order to better understand the place of immediate resource users in an ecology, the thesis also draws in a range of government actors who are becoming increasingly involved in natural resource management.

The thesis concentrates on two villages in a large wetland fishery-forest in Southern Thailand. The main environmental focus of interest was in the fishery, and how local resource users were coping with environmental and socio-economic change. Fieldwork was based on anthropological methods involving nearly two years research in Thailand. Villagers, government officials, NGO workers and academics were all interviewed as part of this research.

The findings of this thesis argue that effective natural resource management requires an understanding of the wider socio-economic context. This has led to a reassessment of what is meant by the term resources. In the specific case of a wetland fishery, the thesis argues that fishing must be seen in the context of multiple resource use. It also argues for greater involvement of local knowledge and practice in the management of such resources in order to ensure equity and sustainability.

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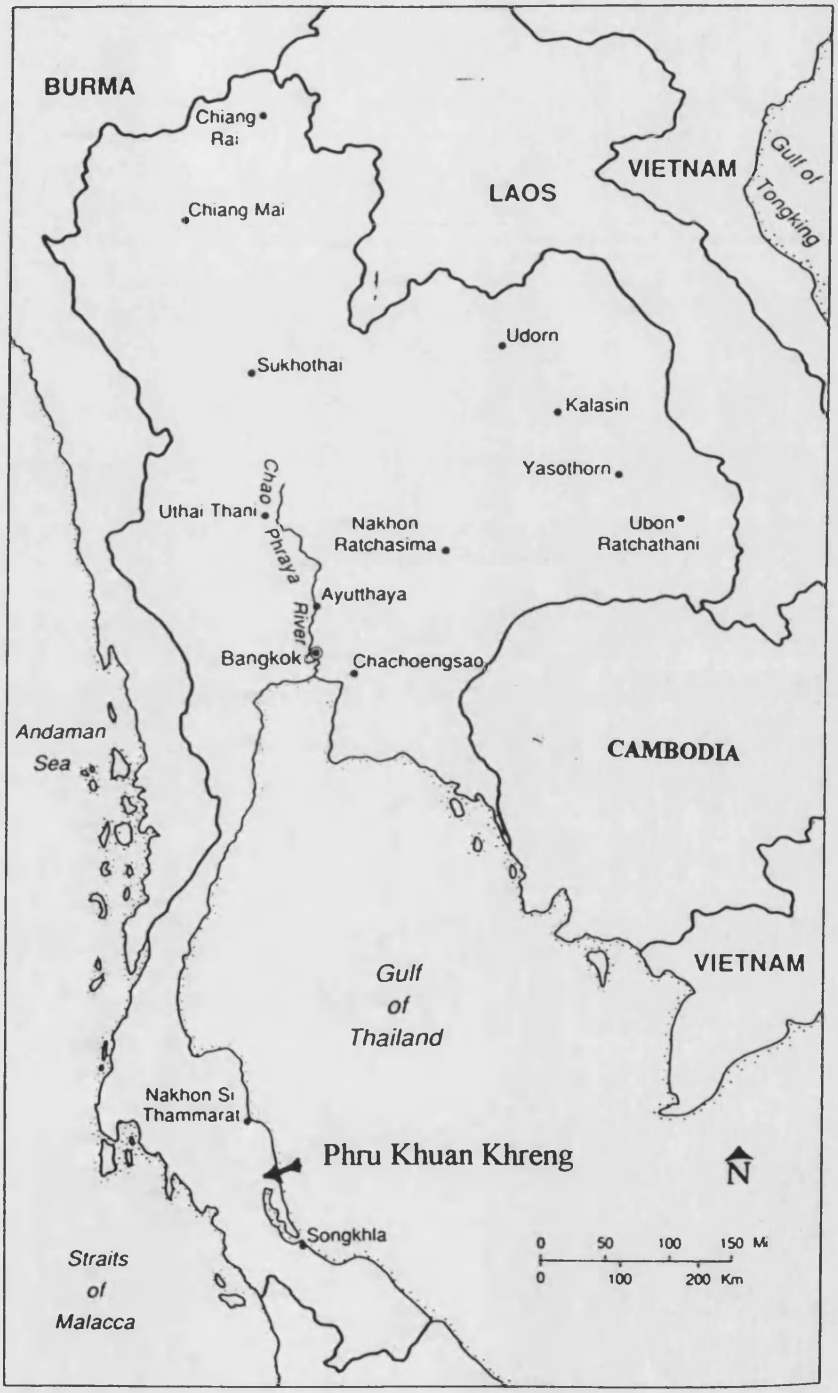
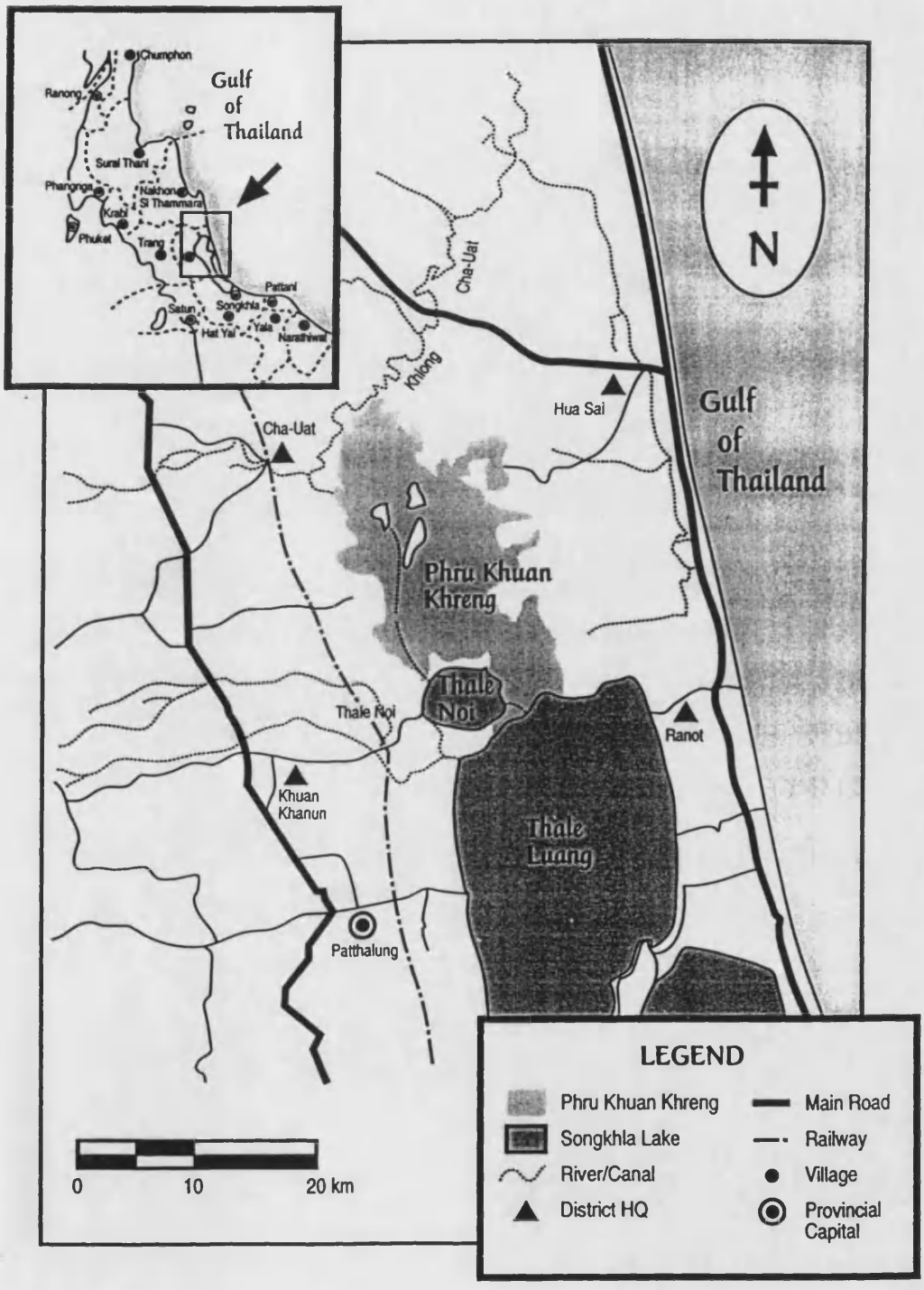
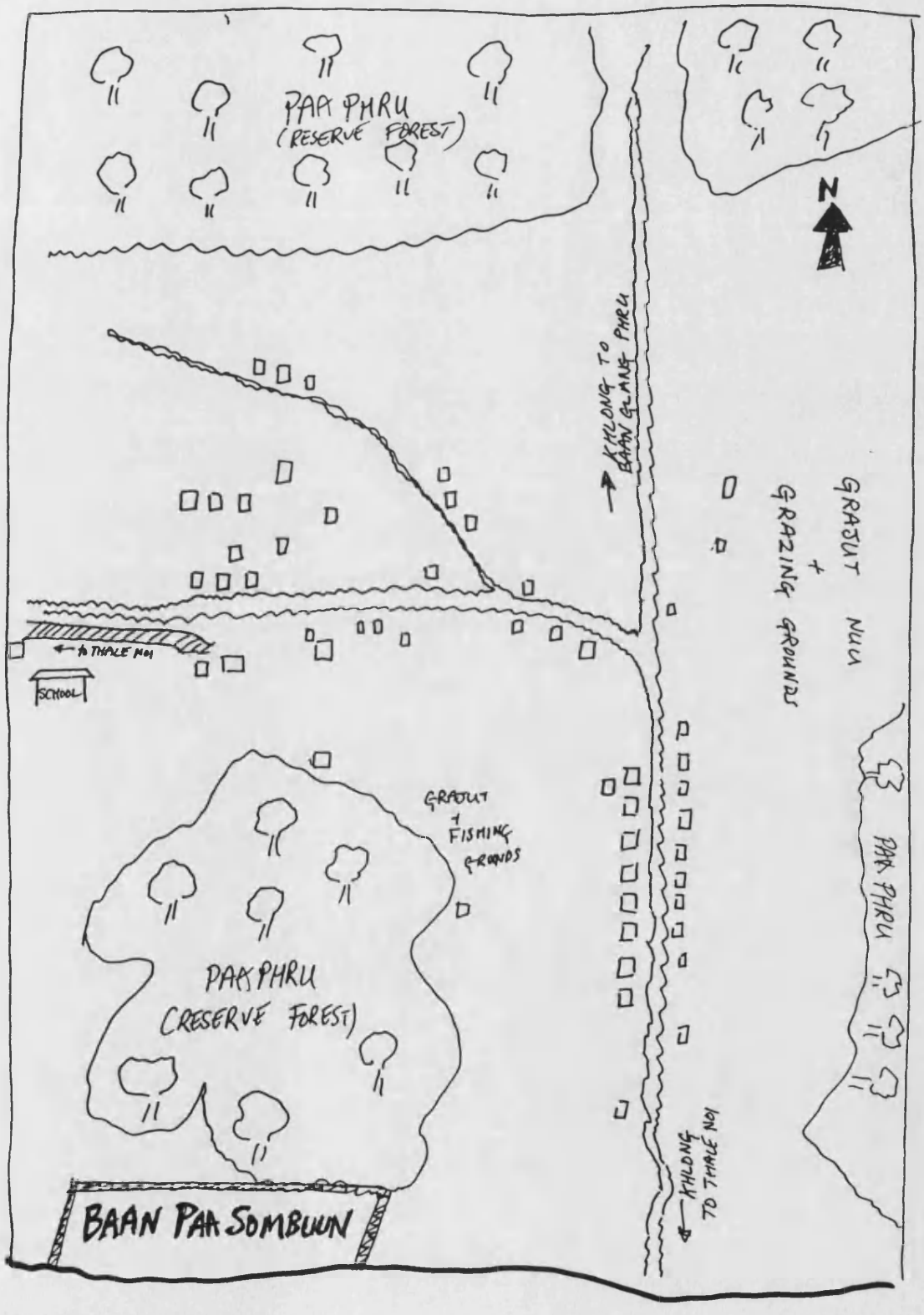
Map 1: Map of Thailand



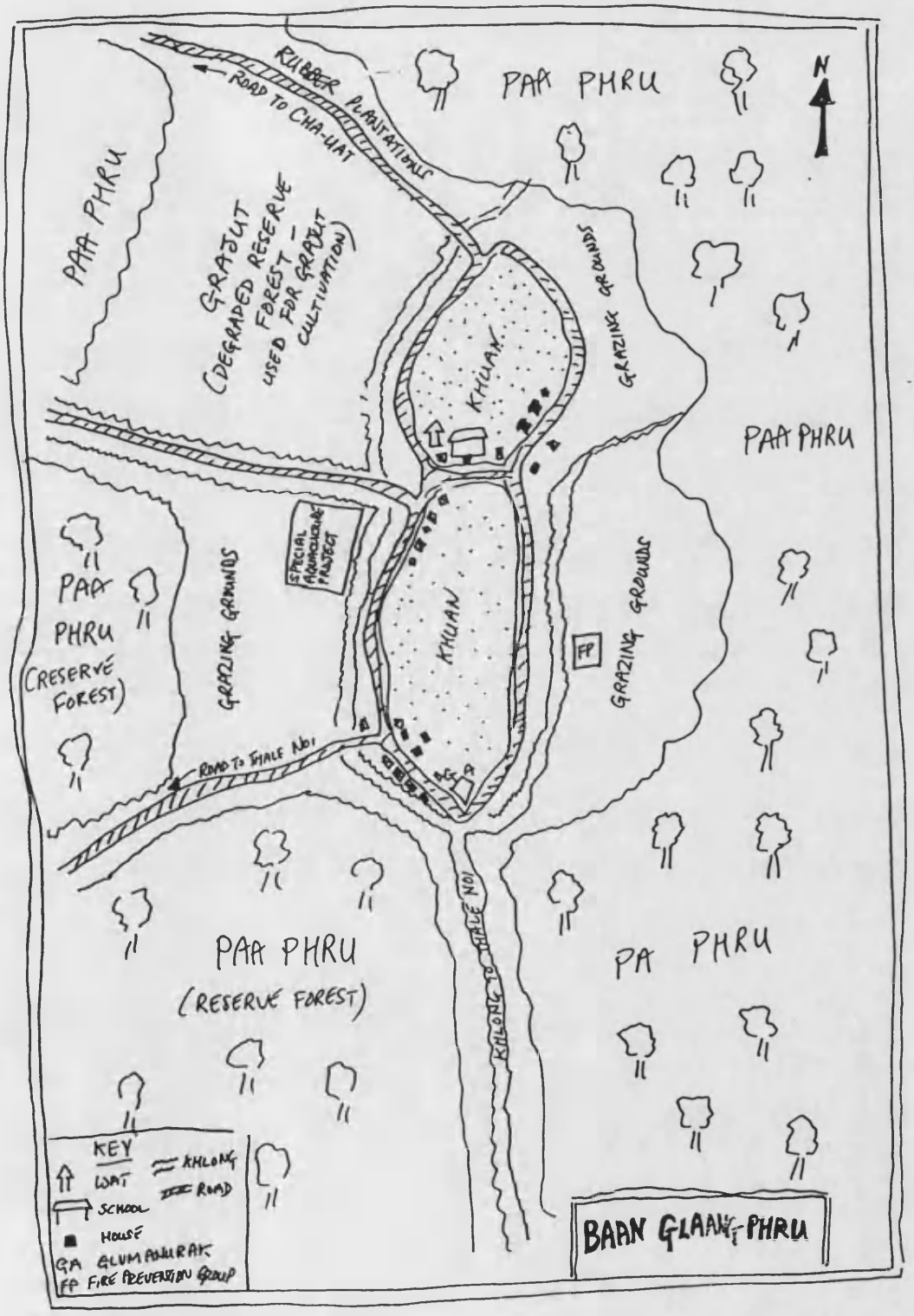
Map 2


Chumphon
Ranong
Surat Thani
Phangnga
Nakhon Si Thammarat
Krabi
Phuket
Trang
Pattani
Songkhla
Satun
Hat Yai
Yala
Narathiwat
Gulf of Thailand
N
Cha-Uat
Khlong
Hua Sai
Gulf of Thailand
Cha-Uat
Phru Khuan Khreng
Thale Noi
Thale Noi
Ranot
Khuan Khanun
Thale Luang
Patthalung
0
10
20 km
LEGEND
Phru Khuan Khreng
Songkhla Lake
River/Canal
District HQ
Main Road
Railway
Village
Provincial Capital

Map 3: Baan Paa Sombuun (based on maps drawn by villagers)



Map 4: Baan Glaang Phru (based on maps drawn by villagers)



i) Notes on Transliteration of Thai Terms

Rendering Thai into a form of English that will make sense to the non-expert reader is a complicated process. There is very little consistency in transliteration in the development-oriented literature on Thailand. However, there are many Thai terms that have a more established English form. For example, *baan* (village), *tambon* , *kamnan* (village headman) are widely used in the development literature. Other words have been employed with less consistency. For example, forest is written variously as *ba, pa* or *paa*, and fish as *bpla. pla* or *plaa.*

I have tried to present Thai words in a form that can be easily read and that is in keeping with how people speak, or in the case of place names, with established English transliteration. This has created some inconsistency. For example, I have used 'g' for the Thai consonant '*gor gai*' (as in *grajut*), except in the case of *kamnan* which has an established spelling in the development literature. However, I have used the consonant 'j' for *jangwat* (and in *grajut*) as it reads more easily and closely to the original Thai sound. Long vowel sounds are doubled, as in the case of *plaa*, *paa* and *muubaan.*

This thesis is intended for a development studies readership, rather than an exclusively Thai studies readership. The transliterations that I have used have been adapted in response to comments from early readers whose main interest was to be able to read the Thai terms in a way that would sound as close as possible to how Thai is spoken. While this may not satisfy the purists, I hope it allows the non-Thai expert to familiarise themselves with Thai development terminology.

ii) Notes on Special Project

Throughout this thesis the names of the key villages and villagers in the Phru have been changed. A fundamental aspect of the trust between myself and interviewees was on the understanding that the anonymity of key informants (both in the villages and in government departments) should be maintained. It has also been necessary to change the name of the aquaculture project. This was in fact initiated by the Princess Chulaporn Research Institute working with the DOF, but is referred to in the text simply as the Special Aquaculture Project.

I have also refrained from discussing the Royal Project for the Pak Phanang River. However, many of the issues relating to this project are shared with the RID Phru Khuan Khreng Development Project. This RID project is discussed openly in the text.

CHAPTER ONE
INTRODUCTION

1.i Introduction

This thesis is about natural resource management, focusing on a particular type of freshwater fishery; a wetland fishery. Specifically it deals with how people living within the Phru Khuan Khreng wetland in Southern Thailand are adapting their livelihood strategies, including fishing, in the face of rapid environmental and socio-economic change. Taking local resource users as its starting point, the thesis also draws in a number of regional and national government actors who are becoming increasingly involved in processes of economic development and environmental management of the area. As the Phru Khuan Khreng increasingly becomes a target of state policy, a range of competing interpretations of the Phru environment are being brought together. This thesis will argue that these contested interpretations of the environment are also interpretations of community (ie. how people should live together) and economy (ie. how such individuals and groups should utilise and distribute resources). With rapid development and perceived environmental degradation these interpretations are inevitably also about continuity; of the family, the community (whether local, regional or national) and of their resource base. The conceptualisations of ecology that dominate development and natural resource management tend to ignore the complex human dimensions of ecology. This is particularly true of wetland fisheries, which combine a number of resource uses, and which pose considerable challenges to biological and socio-economic modelling. In response, this thesis presents an analytical model of ecology that combines the cultural imaginings of different social actors (cf Croll and Parkin 1992), as well as the complex social arenas in which they operate.

Issues of environmental degradation have come to dominate recent debates of economic development (WCED 1987, Redclift & Benton 1994, Adams 1990). International opinion has witnessed a significant shift towards recognition of socio-economic dimensions of environmental degradation. At the local level, environmental management, particularly in the area of environmental commons such as forests and

fisheries, has increasingly recognised the value of indigenous knowledge and practice, advocating community participation as a means of ensuring sustainable development (Adams 1990, McCay and Acheson 1987, Banuri & Marglin 1993, Korten 1987, Berkes 1989, Pomeroy 1991, Warren 1991). Indeed, recent national development plans for Thailand have also adopted the rhetoric of participation and co-management of natural resources (NESDB 1997). Yet the widespread adoption of such concepts often obscures the conflict of different interests that is characteristic of development. This is further fuelled by a dependency on natural science in resource management, and an increasingly technocratic approach to policy. As a result, the political and distributional dimensions to policy are side-stepped. This thesis argues that underpinning interpretations of development and natural resource management are particular conceptualisations of the relationship between people and their environment (Colby 1990, Norgaard 1994, Redclift and Woodgate 1994) . Equally, development and environmental management policy determine access to, and distribution of resources and benefits.

If natural resource management policy is to achieve some form of sustainable, equitable distribution of resources and benefits it must be able to accommodate the diversity and complexity of rural society. In order to do so it must break away from a conceptualisation of ecology that gives priority to the non-human environment, and also from a conceptualisation of policy as being a technical, apolitical process. These requirements are felt most acutely in the areas of wetland and inland capture fisheries management. Historically neglected by policy makers, these resources have suffered the adverse effects of development and have become increasingly vulnerable (Dugon 1990, Maltby et al 1992). Yet they continue to support the livelihoods of millions of people operating in complex societies with dynamic patterns of resource use.

The case study of the Phru Khuan Khreng which will form the backbone of this thesis is unique. There is very little in the literature on development and the environment in Thailand that deals with wetlands or freshwater fisheries. At the same time there is a great deal of controversy concerning the biology and definition of wetlands, as well as a growing international concern with the depletion of freshwater fishery resources (Maltby et al 1992a, Dugon 1990, Heady et al 1995). However, the complex ways in

which people utilise freshwater fisheries and wetland resources are poorly understood. Since fishing is usually one of a range of resource uses in wetland areas, it is necessary to place fishing activity in the context of complex livelihood strategies. Successful management of such an area therefore requires a thorough understanding of the diversity and dynamism of the human dimensions to ecology.

1.ii Background to the Research

The inspiration for the research for this thesis grew out of a British Overseas Development Administration (ODA) funded research project entitled 'Poverty, Equity and Sustainability in the Management of Inland Capture Fisheries in South and South East Asia' (Heady et al 1995, Masae and McGregor 1996, Hall 1994, MRAG 1994, Masae 1996). This project was based at three sites in three countries; Indonesia, Bangladesh and Thailand. Employing an interdisciplinary team of socio-economists and fisheries biologists, the project aimed to build up both a biological and socio-economic model of the fishery and fishers in order to assess policy options and make policy recommendations. The project was predicated upon the belief that freshwater fisheries constitute an important environmental and economic resource, and that they are greatly under threat.

The research covered a range of issues. The starting point was the biology of the fishery, and a model focusing on many of the commercially important fish was devised (MRAG 1994). This was complemented by investigation of a number of socio-economic issues. Local management issues that were addressed include the auctioning of fishing rights in Bangladesh (Kremer 1992), the role of village headmen in implementing natural resource management policy in Thailand (Masae 1996), and the role of women in fisheries (Kittilomkul in press). Some of the effects of complementary economic activities were addressed in Sweeting's (1993) investigation of agricultural run-off on the Lempuing river, and the economic effects of aquaculture on freshwater fisheries in Thailand (McFadyen 1995). This current research was inspired by the apparent gap between local and specialist knowledges

concerning the fishery and fishing practice, and the need to incorporate the Phru Khuan Khreng into the wider fishery.

The Thai component of the project was based on the small freshwater lake of Thale Noi and to a lesser extent the adjoining freshwater wetland forest of the Phru Khuan Khreng. A number of issues pertaining to the Phru Khuan Khreng that had arisen during the original research project were felt to have been inadequately addressed in the time-frame of the original project. It was the Phru Khuan Khreng, and in particular the villages of Baan Glaang Phru and Baan Paa Sombuun that were to be the case studies for this thesis.

The Phru Khuan Khreng is a large wetland forest adjoining the Thale Noi lake (*see map 2*). The Phru lies at the north of the Thale Sap lake system, and to the south of the Pak Phanang river (*see map 2*). Historically it has been regarded as a marginal area beset by environmental problems of highly acidic waters, and thus with limited potential for economic development. The local economy is still presented as being largely dependent on fishing and the collection of sedge grass (*grajut*), and the local people as being backward and unruly. Added to this is the assumption the Phru plays a relatively insignificant role within the wider floodplain fishery. State fisheries policy, as much as it has been enforced in either site, has been more clearly focused on Thale Noi (Masae and McGregor 1996). The Phru on the other hand, has been targeted more as a forest by the Royal Department of Forestry (RDF).

During the course of the original ODA project it became clear that formerly the Phru Khuan Khreng had been an important seasonal fishing ground for the surrounding areas. There was also a strong local perception both in Thale Noi and in the Phru Khuan Khreng that the Phru played a vital ecological function as a breeding and nursery ground for some species in the wider fishery (Masae and McGregor 1996, Hall 1994). Furthermore, the environmental degradation that was locally perceived to have been a major cause of the decline of the whole fishery was felt to lie in the degradation of the Phru rather than in Thale Noi itself. Certain recent innovations in fishing practice adopted in the Phru (ie. the refuge trap ponds) were also considered to be contributing to the continuing decline of the fishery. These assertions were

difficult to prove and necessitated further enquiry. However, it was clear that official policy towards the fishery focused on issues of overfishing (Masae & McGregor 1996). Added to this were a number of large-scale initiatives based on competing interpretations of what the Phru is and should be. Currently managed by the RDF as a forest and waterbird park under the banner of a Non-hunting Area, other departmental plans focused on its potential as a freshwater irrigation reservoir. In all interpretations of the Phru Khuan Khreng that guide policy, the formal knowledge regarding local socio-economic conditions and practice has at best been limited.

1.iii Review of Fisheries Management Strategies

Fisheries policy, whether freshwater or marine, has been based on a number of epistemological assumptions and consequently a series of management strategies. As with many natural resource systems, the point of reference for fisheries policy has been the capacity to define and model the fishery system in terms of its biology. From this, fisheries policy has aimed to maximise the economic exploitation of the fishery within boundaries that are considered to represent a 'maximum sustainable yield' (see Schaeffer 1957). This concept of 'maximum sustainable yield' (MSY) represents a level of equilibrium between human activity and biology. It is believed that it is possible to model the interaction of fish species and fishing effort, so that natural recruitment to the fishery can compensate for human exploitation (see MRAG 1994, Heady et al 1995). One aim of policy is thus to maintain this equilibrium level of exploitation.

Fisheries management policy has therefore tended to focus on means of controlling levels of fishing effort, and attempts to protect vulnerable fishing grounds and seasons. Fishing effort can be targeted in a number of ways. Firstly, the number of fishers can be restricted. This is often attempted through a system of licensing that restricts access to the fishery. It is therefore important for policy-makers to know the numbers of fishers. If poverty alleviation is also to be a target of policy, it is necessary to know who the fishers are and whether they can be categorised as poor or wealthy. Placing restrictions on the type of gear used can be a further policy tool

so as to limit the volume of catch. Fishing methods that catch indiscriminately of species and size can thus be restricted. Prohibiting types of fishing gear is also a method of limiting the number of fish that are caught before full maturation. For example, minimum mesh sizes can be enforced so as to prevent the catching of young fish that have not had opportunity to breed and thereby replenish the brood stock. Policy can also be directed towards protecting fish stocks during vulnerable periods of breeding and spawning. This can be achieved through the enforcement of closed seasons, or through the establishment of fishery reserves in breeding and spawning grounds.

Fisheries policy can also adopt a slightly different, although often complementary approach by attempting to replenish stocks. Releasing fry of indigenous or introduced species is often attempted as a means of increasing the volume of brood stock. More recently, fish farming to varying degrees of intensity has been advocated as a means of supplementing or replacing degraded or economically inefficient fisheries. All the above mentioned fisheries management techniques are employed by policy makers, but have also been implemented in various forms within indigenous management systems. The tension between specialist and local knowledge with regards to fisheries management will form a central theme in this thesis. A more detailed assessment of state policy towards freshwater fisheries in Thailand will be presented in chapter three. Indigenous management techniques will be discussed more fully in chapters five and six.

The capacity to model a fishery effectively, whether marine or freshwater, has come under serious challenge in recent years. The collapse of many fisheries such as in the Great Lakes in the USA (Yearley 1985) and Atlantic cod fisheries (Finnlayson 1995) has been attributed largely to the misconception of a 'maximum sustainable yield', and the inability to effectively define the boundaries of the fishery. The mechanistic, positivist model of a fishery which underpins notions of MSY has been challenged by the application of chaos theory to fisheries. It is argued that fisheries do not necessarily behave in the uniform and linear manner as is often assumed, and that fisheries are capable of sudden collapse but also sudden regeneration. Even if the concept of MSY still held, serious questions remain concerning the definition of the

boundaries of a fishery and the time frame of data required to adequately model the fishery. Management models based on catch and effort data such as the FAO BEAM 4 model applied in the original ODA project (see MRAG 1994), also present significant theoretical and practical challenges to their reliability. As will become clearer in later chapters, these issues are of great relevance to wetland and floodplain fisheries. In these fisheries, only a relatively small area is permanently inundated, but a far greater area can be inundated during the flood season. At the same time, fishing activity is not uniform throughout fishing communities or throughout the year. The recruitment of such fisheries is also greatly influenced by wider environmental factors as well as by hydrological issues.

These issues of defining and modelling fisheries and fishing effort are of central importance for this thesis. There is a constant tension between policy makers and fishers as to whose knowledge and practice is the most appropriate, and as to whose interests policy serves. Policy intervention is predicated on the belief that policy makers possess specialist knowledge which thereby legitimises their right to act. The collapse of commons resources such as fisheries has often been argued to be the result of a 'tragedy of the commons' (Hardin 1968), and the ignorance and inappropriate practice of local resource users. This clearly has a political dimension as commons resources are taken out of local control and placed under the control of government agencies. Policy is thus a means of staking claims to 'ownership' of resource systems and legitimising the authority of policy makers. These issues are at the forefront in what have until recently been marginal areas, but which are increasingly being incorporated into the nation state. However, the limitations of the scientific and institutional capacity of the state to model and manage areas such as the Phru, undermines the state's authority to do so, and enhances the potential role of local resource users in the policy process.

1.iv Macro Policy Towards the Phru Khuan Khreng

The Phru Khuan Khreng is not only the object of fisheries policy. Indeed the relative neglect in terms of fisheries policy is a theme that will be repeatedly referred to. It is

important to note here that the way in which the Phru Khuan Khreng is defined as a particular type of resource has profound ramifications. For example, defining the Phru as a fishery implies that it falls under the jurisdiction of the Department of Fisheries, whereas defining the Phru as a wetland forest places it under the jurisdiction of the Department of Forestry. The ambiguous nature of areas such as the Phru makes these issues especially problematic.

A number of large-scale policy initiatives have been proposed for the Phru Khuan Khreng. These provide an important context for assessing policy options towards the Phru. Management approaches towards the Phru Khuan Khreng are based on conflicting interpretations of its essential nature and function, and its potential for development. This is often defined in terms of a wetland's potential contribution to economic activity in surrounding areas. Historically wetlands world-wide have been managed by neglect as wastelands, or have been flooded for fishing or drained for agriculture. It is only very recently that wetlands have been argued to offer important functions and values in their own right.

Since 1975 the Phru Khuan Khreng has been under the jurisdiction of the Thale Noi Non-hunting Area. In Thailand Non-hunting Areas are the lowest grade of National Park in which only the hunting of animals and certain activities in reserve forest areas (*pa so-nguwan*) are restricted. They are often established in areas in which people are long settled, and in which they hold some form of land title. Raising the status of the Phru Khuan Khreng to that of a National Park is politically volatile as it would require the further restriction of local economic activity, and perhaps the eviction of sections of the local population.

The Thale Noi Non-hunting Area was established primarily as a means of protecting its large waterbird population, and, as with all National Parks in Thailand, is administered by the Royal Department of Forestry (RDF). Its conservation value is currently being assessed by the RDF and the Office of Environmental Policy and Planning (OEPP), and it is one of three sites in Thailand that is being considered for designation as a protected area under the Ramsar convention to which Thailand is a recent signatory. As a Ramsar conservation area, economic activity and potential for

development would be severely restricted. In the late 1980s a logging ban was imposed and the dominant species of tree in the Phru, melaleuca leucadendra (*dton samet*) became a protected species. This has led to the prohibition and eradication of charcoal production in the Phru although some illegal logging continues. The Non-hunting Area is administered by the Wildlife Protection Division of the RDF known locally as the *glum anurak* or 'conservation group'. Its main headquarters is in Baan Thale Noi, but it also has an important outpost in the Phru at the village of Baan Glaang Phru, employing local people. This local group play an increasingly important role in the daily management of the Phru, and will be discussed further in chapters five and six.

The main recommendation in the light of growing conservation interests, agreed on by the RDF, OEPP and Tourism Authority of Thailand (TAT) is the further development of tourism industry under the loose banner of 'ecotourism'. This is a widely applied, but significantly vague concept. At the moment, an estimated 100 000 tourists visit the site annually, the vast majority of whom are day-trippers to the edge of Thale Noi (Parr 1994). Very few of these visitors penetrate the Phru Khuan Khreng, and very few of the financial benefits go beyond a handful of people in Thale Noi. As yet, the economic potential of ecotourism for the inhabitants of the Phru Khuan Khreng has not been adequately assessed.

Despite rhetorical commitments to notions of 'conservation' not all government departments interpret it in the same way. The literature on development in Thailand makes constant reference to conflict and poor co-ordination between government departments (see Rigg 1991, Tongsawate and Tips 1988). Conflicting objectives of government departments are clearly evident in the case of the Phru. At the same time that the RDF, OEPP and TAT are assessing the conservation value and potential of the Phru, the Royal Irrigation Department (RID) has been considering a well-publicised project to build a dyke around the perimeter of the Phru. This would lead to the permanent inundation of the Phru. It is a project that is being sold to local people as a means of rehabilitating the fishery according to a very simple logic of 'more water equals more fish'. The project argues that fishing and *grajut* will provide an improved income for all in the Phru; even those whose current livelihoods would

be lost. As will become clearer in our discussion of local fishing knowledge and practice, it is not a line of thinking that necessarily fits well with local practice and interest. This project is a constant subject of discussion among locals in the Phru. There are many conflicting views on this project, as there are many different resource users in the Phru. The project is also influenced by the belief that the main forms of economic activity in the Phru are fishing and the collection of the sedge grass (*grajut*). As will be discussed in chapter five, the Phru Khuan Khreng is characterised by multiple resource use activities. However, the complex and dynamic patterns of resource use are no better understood by the RID than they are by the DOF. It is in response to this, that this thesis presents a detailed examination of resource use in the Phru, and a detailed analysis of local knowledge and practice with regards to fishing.

Proposals for a barrage across the south of the Thale Sap lake have been discussed for over a decade. An influential assessment of the likely effects of such a project was presented by a consortium of foreign and Thai experts (see Taylor & Sons 1985). This is a highly controversial project that has generated a great deal of opposition among many communities around the Songkhla Lake Basin. The effects of the proposed project remain uncertain, but what is clear is that the existing ecology of the Lake system would be irrevocably changed. The Phru Khuan Khreng would not escape the effects of this project. Again no decision has been made regarding this project but the Taylor and Sons report, as with the RID Environmental Impact Assessment (CORIN et al 1994) provide a useful insight into official attitudes towards the Phru Khuan Khreng. At this point it is sufficient to note that both these projects represent attempts to radically alter the ecology, and as a result the economy, of a highly complex Lake system of which the Phru Khuan Khreng is a part. The definition of that ecology and the desirability of such development remain highly contested in the Phru.

1.v Whose 'nature' counts? The Framework for the thesis

The starting point for this thesis is, therefore, the people of the Phru and the livelihood strategies they are adopting, and how they are interpreting the world (both the physical and social) around them. The fishery had been the starting point of the

original research and became the means of exploring this complex of issues. The main issues of interest originally focused on how people fished, how they explained the apparent decline of the fishery, and how they were responding to this apparent decline. In order to understand local conditions and processes it was also necessary to consider how external (ie. state) management initiatives fitted with existing local knowledge and practice. This generated an analytical framework that incorporated the interplay of the environment, local communities, state, and market, as well as knowledge issues.

In the formative stages of this research the emphasis remained on the fishery and on fisheries management. However, it soon became clear that utilisation of the fishery could not be understood without an understanding of how the fishery resources fitted into other available resources, whether natural, economic or social. Further, the knowledge and practice of individual fishers and fishing communities needed to be situated. This required an appreciation of the wider context of economic change and planned development that brought the people of the Phru into new socio-economic relationships and structures. Throughout this project the fishery remained the means of exploring other issues, and fishing has remained the organising focus of this research.

A prominent feature of contemporary rural responses to change is the increased need for human management of the environment. At one level this can be seen in the growing role of the state and government departments in managing common property resources (CPRs) such as forests and fisheries. It can also be seen in the ways in which local people are intervening more directly in the refashioning of their immediate environment. With this perceived need for more management, come more contested notions of what the environment is and how it should be managed.

The title for this thesis was taken from recent work of Robert Chambers in which he argues that in the arena of development there are 'multiple realities', and asks the question, 'whose reality counts?' in the development process (Chambers 1997). Chambers has long advocated that the realities of the poor and marginalised should count as much, if not more than the 'realities' of the development professionals and

policy makers. His argument clearly comes from a social constructivist tradition which presents knowledge and reality as largely socially constructed. In the field of natural resource and environmental management, the way in which the reality of the environment is constructed as well as notions of what is 'natural' all have powerful connotations for legitimising policy and practice.

This research combines two inter-related approaches. The first draws from the work of McCay (1978) on maritime fisheries, in which she presents a model of a 'people ecology' that hinges on notions of 'adaptive strategies' of resource use. The second theme is taken from the social constructivist literature that discusses the ways in which the environment is given social meaning and value (Croll and Parkin 1992, Dickens 1992, Evernden 1992). The combination of these two approaches is particularly relevant to the case study of the Phru Khuan Khreng. Wetland fisheries are particular types of resources. The seasonal dynamism of wetlands combined with the inherent uncertainty of fisheries generates a multipicity of resources, resource uses and users. This in turn generates a wide range of interests, knowledges and realities. In a period of rapid environmental and socio-economic change rural people are increasingly being drawn into new patterns of organisation, and into new relations in their own communities, as well as with markets and the state. The processes of environmental and socio-economic change are still being interpreted and assessed by locals. There is no such thing as local consensus regarding these changes. At the same time, the conflicting interests of development and conservation for the area have generated the reinterpretation of the environmental characteristics and value of the Phru Khuan Khreng.

1.vi Outline of Chapters

The following chapter will present the theoretical framework of this thesis in greater detail. This will discuss McCay's (1978) model of a 'people-centred ecology', and on the 'adaptive strategies' of natural resource users. It will be followed by a discussion of methodological issues, and a more personal account of the fieldwork experience. Chapter four will discuss the ways in which concepts of development have been

contested and politicised in Thailand, with particular reference to the conflict between local and specialist knowledges. Specific issues concerning forests and freshwater fisheries will also be outlined in chapter four. This discussion will be followed by a more general, descriptive chapter on the Phru Khuan Khreng and of the two villages of Baan Glaang Phru and Baan Paa Sombuun in which fieldwork was conducted. The remaining chapters will present the case material. Chapter six will focus on trends in natural resource use in the two villages in the Phru Khuan Khreng. It will describe the range of resources that are utilised in the Phru, and analyse the dynamics of resource use patterns. This will be followed by a discussion of local perceptions of environmental change, and the development process. A detailed examination of the flood fishing season of 1995 will be presented, included an analysis of local refuge trap fishing, and state-sponsored aquaculture. Chapter eight will discuss competing interpretations of development and conservation for the Phru as applied in macro-policy for the Phru, and the role of the state in this process. The final chapter will provide a concluding discussion of the case material, and the implications for wetland fisheries management.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.i Introduction

Environmental management is an attempt to create a particular relationship between society and the environment. It is a process of valuing resources, resource uses and types of social organisation. Issues of human-environment relations have dominated social anthropology from its earliest days. Much of early anthropological thinking regarding human-environment relations was characterised by geographical and environmental determinism, and functionalist analyses (Ellen 1979). Often this was applied to explain the apparent socio-economic predominance of western industrialised societies. Social organisation and political culture of non-western societies was also explained by recourse to environmental determinism, such as Wittfogel's notion of 'hydraulic societies' of South East Asia (Rigg 1992). The early promise of human ecology was not realised (Cittadino 1993). A more recent and more enlightened interest in human-environment issues is generally traced to Steward's 'cultural ecology', or Harris' cultural materialism (Ellen 1979). Within the last twenty or thirty years there has been yet another renaissance of interest in these sets of issues, largely due to the twin pressures of development and environmental degradation. However, many of the analytical assumptions, particularly of environmental determinism and functionalism permeate contemporary ecological thought in the fields of development and environmental management. Despite renewed interest in the human dimension of ecology the complexities of social organisation and of how the environment is socially constructed are often only superficially recognised.

The challenge for this research was to adapt an analytical framework that would facilitate understanding of a case-study that does not fit easily with established notions of rural societal change and the development process. Thailand is a particular case of development. The majority of the literature on development in Thailand deals with the Central, Northern and North Eastern regions, and with predominantly rice-

cultivating communities (see Turton 1987, Hart et al 1989, Tanabe 1994, Hirsch 1990). The South has received far less attention, and even in this small category of work there is hardly any mention of wetlands and inland capture fisheries. Much of the work on Thailand has challenged the validity of such fundamental categories of social organisation as the village (Kemp 1987, Hirsch 1990, Hirsch 1991). As a result, it was necessary to avoid framing the issue of human-environment relations in terms of the village community. Rather than starting from assumptions regarding the Phru and thereby imposing a level of understanding that only existed at the level of abstraction, it was felt that the complexity and dynamism of rural life in the Phru Khuan Khreng should be taken as the starting point for enquiry.

2.ii People-Centred Ecology

The work of McCay (1978, 1987) has a particular resonance for this research as it deals with people engaged in fishing, and confronts problems of management of common property resources. The model of a 'people ecology' that she presents is in response to many of the assumptions within systems ecology, and of environmental determinism and functionalism. McCay (1978) emphasises processes of adaptation and incorporates the dynamism of patterns of resource use as well as dynamic social relations among resource users. She seeks to accommodate ways in which people can adapt the environment in which they live, and how the environment can influence people's resource use strategies. For McCay, the social world in which resource users operate is of as much significance as the environmental world. Both state policy and changing market conditions influence resource use patterns, and therefore need to be incorporated into the model of ecology.

McCay makes an important break from the majority of the literature on common property resources (see Ostrom 1990, Wade 1987, Berkes 1989, McCay & Acheson 1987). Much of this literature is in response to Hardin's (1968) notion of a 'tragedy of the commons' and aims to illustrate that CPRs can be efficient and equitable. Many authors have devoted their attention to assessing the conditions under which CPRs can be sustained (Ostrom 1990, Wade 1987). For example, Ostrom (1990) discusses

the need for clearly defined boundaries, shared interest of CPR users, legitimacy of institutions and norms to govern CPRs, and the capacity to monitor their use and exclude outsiders. However, the very conditions that Ostrom outlines are the most difficult to ensure in an era in which commons resources and rural resource users are increasingly being destabilised by processes of development and change. For example, generating 'shared interest' among resource users and excluding outsiders becomes most difficult under conditions of intensified stratification, and conflict between different types of resource use. These are the very conditions that most afflict contemporary common property resources. Instead of focusing on the preconditions for successful CPR management, this research is concerned with how CPR users cope with the very processes of change that undermine the resource and resource users.

McCay's (1978) critique of systems ecology is concerned with the ways in which analytical systems are confused with objective reality. Implicit in a notion of a bounded system lies an assumption of order and therefore balance that guides the system (cf. Rappaport 1979). These notions are prevalent in biological models of ecosystems, particularly as applied in fisheries management (see Finlayson 1994) as well as in resource economics, and permeate much of the thinking of natural resource management. Policy interventions are aimed at identifying and alleviating the symptoms of ill-balance and creating the conditions necessary for continued balanced health. However, as McCay points out, such conceptualisations of equilibrium within a system rest upon several assumptions; that order and coherence are necessary features of a 'system' and that the physical, spatial and temporal boundaries of the system can be defined. For McCay, there is a confusion over whether the system is other than an analytical system. In the current era of sustainable development, the definition of features and boundaries of ecological systems can have profound political implications in determining issues of access and distribution of resources, and what forms of human activity are sustainable (and by inference, desirable). Rather than taking the system as the point of departure, McCay argues that by focusing on people and the complex of social relations and organisations, the processes of adaptation and change can be revealed. By implication, such a people-centred

approach focuses on processes of negotiation and conflict and human agency, rather than taking the system itself as a given (cf. Long and Long 1992).

Incorporating the human dimension to ecological thinking requires the breaking down of complex social processes. Often this complexity is obscured by talk of populations' relationship with the environment (McCay 1978). By aggregating human populations, systems ecology overlooks the internal dynamism of human social relations and organisation. When combined with functionalist explanations of human resource use, there is also a danger of implying a shared vision among human populations, and some notion of a greater good for the collective human population so that an equilibrium state is a desired state. While this may be applicable at the level of analysis, shared-interest, cohesion and homogeneity cannot be assumed in human populations, and therefore not in human populations' relationship with their environment. Disequilibrium is as much a goal of social groups as equilibrium. For example, the extensive literature on famine has argued against analyses of famine as being the result of environmental failure. In particular the work of Sen (1981) has illustrated the ways in which the 'disequilibrium' of famine conditions can be to the political and economic advantage of certain sub-groups. Indeed, crises such as famine can be the desired goals of powerful population groups and might be actively created. It is therefore necessary to have a comprehensive perspective on the political history and internal competition and dynamism of human populations.

In order to overcome these analytical limitations and to avoid grand-theory, McCay (1978) argues for a model of ecology that takes people, rather than systems as its starting point. To this end she advocates a model of ecology that adopts an 'individual centred analysis'. She argues that

> 'people rather than ecological systems be the primary unit of analysis, and that instead of depicting homoeostatic systems relating people to their environment, we look instead at the actual problems people face, and how they respond to them' (p.418).

This approach to ecology acknowledges the dynamism and complexity of social organisation. By steering away from grand theory McCay offers a model that emphasises the iterative process of human-environment relations and that restores the primacy of human agency in shaping the physical and social worlds (cf. Long & Long 1992). Both these worlds are being negotiated and reinvented to uncertain and poorly defined ends (cf. Long & Long 1992). Equilibrium cannot be assumed as an integral feature of ecologies or of societies. Thus, for McCay the starting point for analysis is people and the adaptive strategies that they adopt. She identifies a number of such strategies, such as multi-job strategies, diversification and intensification. Such an emphasis on agency and micro-processes will be discussed in greater detail with reference to the work of Norman Long (viz. Long & Long 1992).

In talking of 'adaptive strategies' it is essential that one remains wary of assuming that people are adapting to periods of disequilibrium, and are striving for equilibrium. This is of particular significance in periods of rapid development and environmental change, in which political dimensions to history of settlement have profound implications. Disorder may be such a feature that adaptation is a constant process in a perpetually changing and uncertain physical and social environment. In the case study with which this thesis is concerned, adaptation to environmental conditions and to socio-economic conditions is a constant theme of people's resource use strategies. Again, the concept of adaptation can imply some notion of equilibrium as a desired and identifiable goal for human populations. While this notion of equilibrium may exist at the level of people's imagination, the social processes of negotiation whereby particular interpretations of equilibrium become accepted within social groups, are often highly competitive. Equilibrium states are not of the system itself. As a result, there can be no assumption of shared interest among human populations in defining equilibrium states.

There are many similarities between the Newfoundland marine fishery with which McCay (1978) is concerned and the wetland forest fishery of the Phru Khuan Khreng. However, there are also important empirical differences that raise significant analytical challenges. These can be divided into issues concerning the wetland fishery itself, to resources and also to resource users. The seasonality of the wetland fishery

and the range of natural resources that are locally utilised, require that fishing be placed in the context of other available resources. The contemporary context of planned development in the Phru and the region are such that a range of other resources are increasingly utilised. At the same time a number of different social actors are operating in the Phru. These issues will be dealt with in a later section (see page 14).

2.iii Social Construction of Environment and Natural Resource Management Policy

The research also draws on social constructivist literature which argues that particular cultures have particular understandings of the environment (Milton 1993, Croll and Parkin 1992, Redclift & Woodgate 1994, Dickens 1992, Evernden 1992). These interpretations are not only determined by the innate characteristics of the non-human world but also by the cognitive processes of the individual human, and the social and cultural context within which a particular human operates as a social being (Milton 1996, Redclift & Benton 1994, Ellen 1979, Scoones and Thomson 1993). As a range of local, national and even international actors become involved in developmental and environmental policy, a range of social constructions of the environment are brought together. Applying this set of literature to the current case-study allows analysis to be directed towards the processes of interpretation, negotiation and conflict that underpin development and environmental management. Within the current discourse of conservation and sustainable development, the way in which 'nature' is ascribed particular cultural meaning and value has powerful connotations (Goodman & Redclift 1991).

Much of the social constructivist literature in development studies comes from social anthropology, and what Croll and Parkin (1992) refer to as this discipline's claims to have a unique capacity to present the worldviews of particular cultures. This literature is primarily concerned with the cultural classification of environmental phenomena, and what these environmental phenomena come to represent. For other writers, indigenous cultural representations of the environment have practical

significance in the performance of livelihood strategies, such as agriculture (see Tanabe 1994, Richards 1993). It is through the performance of these strategies that ecological and social relations are brought together. For Tanabe (1994) farming systems are not merely technical systems, but represent ecological and social adaptations that have 'come about through countless cumulative interactions between the ecological and social fields' (p.19). The practical technology on which such farming systems rest is seen as being 'the organising principle of customary practices, which is socially constructed and bodily constituted' (Tanabe 1994 p.19).

In order to better appreciate the depth and sophistication of indigenous knowledge, the social and ecological contexts in which that knowledge operates and is manifest must also be considered. This has led to an interest in local experimentation and innovation (Scoones and Thompson 1993, Richards 1993, van der Ploeg 1989, 1993). It has also led to a study of interfaces between knowledges of different social actors (Long and Long 1992).

2.iiia Dynamic Interpretations

The cultural representation of the environment is not static. Authors such as Evernden (1992) and Dickens (1992) have detailed how western cultural representations of the environment and of nature have changed through time. Others argue that current concern in environmental issues, and the interpretation of the significance of contemporary environmental phenomena is a continuation of this process (Milton 1993).

Underpinning contemporary environmental concern and discussions of sustainable development are understandings of what 'nature' is, and therefore what behaviours and social organisations may be considered 'natural'. The concept of nature is central to western philosophy. For Williams (1976) no word in the English language has been so confused. Throughout history it has acquired different denotative and connotative meanings. The interrelated representations of 'nature as the 'norm', 'the inherent force' and the 'essential quality of things' not only generate an understanding

of nature, but also of appropriate human behaviour (Williams 1976). These understandings underpin many contemporary environmental debates with strategies being condemned or justified according to their naturalness. That is to say, they generate notions that there are processes that are innately natural, and in accordance with the fundamental laws of the universe, and therefore essentially good and correct.

Cultural representations of nature can therefore be regarded as representations of humans and society, and their relationship to the non-human world. The interpretation of 'nature' is an iterative, two-way process between culture and the non-human world (see Ingold 1992). Nature has been used as a sign or a mirror to reflect characteristics of human society. At the same time social values are imposed on nature, and then reprojected onto human society. For example, evolutionary biology emphasised concepts of hierarchy, survival of the fittest and competition (Sahlins 1976). These concepts were taken from elite interpretations of the social world of the time, and were then projected on nature. Once found in the realm of nature they in turn came to legitimise social processes; particularly of class, colonialism and the free market. But it is a highly selective process. Other interpretations of the natural world were less easily accepted, although equally possible. Concepts such as communalism, interdependence and altruism can all be seen in the natural world, but have been less readily acknowledged. Once essentially social values are established in nature they then take on connotations of inevitability, and normality; to such a degree that they are considered so natural that to challenge them is inconceivable (cf.Barthes 1973).

2.iiib Unified Ecology

The social constructivist literature discussed above, has led to recent interest in the appreciation of a range of cultural representations of the environment, and what these reveal about cultural values and how people utilise that environment (Croll and Parkin 1992, Tanabe 1994). This has led to a reinterpretation of human ecology that incorporates people's adaptive livelihood strategies and their cultural imaginings. Recent interest in development studies of the worldviews of the targets of

development has tended to focus on specific, identifiable cultures. In the natural resource management literature, the cultures are of rural people. However, the development process brings many competing actors and worldviews together, including those of the development practitioner. This clash of rationalities is the basis of the conceptual framework that has been applied in this thesis. However, the particular context of planned development raises a fresh set of issues that also must be incorporated into the conceptual framework. The challenges presented by the social phenomenon of development will be discussed in the section below.

2.iv Development and Natural Resource Management

The context of planned development in which natural resource management occurs presents particular challenges to studies of human ecology. Development is an ephemeral and ambiguous concept. For writers such as Goodman and Redclift (1991) a central aspect of development is the refashioning of nature through the application of science and technology. Inherent in the concept of development is the belief in the human capacity to dominate and mould the environment for human ends (Tanabe 1994). Equally, development rests on the notion that it is possible to understand the non-human world; at least in so far as it can be managed. For many critics of western development, such approaches to the non-human world are rooted in a particular (western scientific) culturally constructed dichotomy between nature and culture (Tanabe 1994, Marglin and Marglin 1990, Croll and Parkin 1992, Norgaard 1994). Such a conceptualisation of the relationship between society and nature is argued to have generated a utilitarian perception of the environment (Norgaard 1994) in which the environment becomes a reservoir of resources of economic value. It is not necessarily a perception that is universally shared.

As well as refashioning the environment, development is also a refashioning of the human world and of human values (Hobart 1993). Development, and particularly early modernisation paradigms, were based on notions of progress from primitive agricultural societies to modern industrialised societies and international trade (Harrison 1988). Wrapped in the discourse of science and progress that dominated

modernisation theory, the impediments to development were often presented as the values, knowledge and practice of rural people (Harrison 1988, Scoones and Thomson 1993). As will be discussed in greater detail below, many of these values have formed the basis of development in Thailand (Tanabe 1994, Demaine 1986).

There is an important political connection between processes of planned development and the emergence of nation states. Historically international development took off after the second world war and involved the reconstruction of Europe and Japan, the establishment of international trade and aid regimes (IBRD and IMF), and the Soviet bloc. For Robertson (1985) the rise of post war development is inseparable from the rise of the nation state and the process of nation building. As he argues, planned development both evoked and depended on what Anderson (1991) refers to as the 'imagined community' of the nation state.

The rise of 'development' is seen by many writers as a key component of the colonial legacy and the spread of western economic and political influence, and of western knowledges (Banuri 1990, Marglin and Marglin 1990, Hobart 1993). In this type of analysis, knowledge and power are again linked. An important aspect of establishing the dominance of western political influence was the domination of non-western knowledge (Marglin and Marglin 1990). In modernisation approaches to development the greatest impediments to development were to be found in the ignorance and values of non-western societies (Hobart 1993, Banuri and Apffel Marglin 1993). For Bowler (1993) the history of western political and economic expansion as manifested in the establishment of the western development paradigm, cannot be isolated from the expansion of western scientific knowledge. The predominance of scientific knowledge throughout the world is such that the clash of rationalities does not simply lie in a conflict between the west and the non-western worlds. Science and technology have played such a central role in moulding development that the clash of rationalities is between epistemic communities, rather than between national communities. Although science remains the basis of much development policy, particularly in the field of natural resource management, its authority has not gone unchallenged.

Development is also an economic and political process. As such it is essentially concerned with the production process and the distribution of and access to resources. Decisions concerning the distribution of and access to resources are essentially political decisions. In any such political process there are inevitably winners and losers.

2.iva Knowledge and Multiple Realities

Contemporary critiques have generated a study of development in terms of knowledge issues (eg. Long and Long 1992, Hobart 1993, Banuri & Marglin 1990, Marglin and Marglin 1990, Chambers 1997, Scoones and Thomson 1993). This has largely been inspired by a period of disillusionment with the efficacy of modernisation approaches to development, and grassroots opposition to models of development that are perceived as deriving from western political and cultural values. In particular the failures of the Green Revolution inspired an ongoing interest in what has been termed 'indigenous' and 'local' knowledge. Writers such as Robert Chambers have argued for the recognition of the 'multiple realities' of local people and development practitioners (viz. Chambers 1994, 1997). Much of the writing that Chambers inspired has focused on indigenous technical knowledge (ITK) and has argued for recognition of the value of local knowledge. This has had implications for research and practice and has generated a learning, participative approach to development (Scoones & Thompson 1994). The effects of such a shift in thinking should not be understated. However, the full implications of a recognition of the 'multiple realities' involved in development have not always been appreciated.

The work of Chambers has been motivated by noble intentions to 'put the last first' (1983) and 'the first last' (1997). He argues the case for the marginalised, and advocates reflexive humility for development professionals. He presents practical techniques, often in terms of adapting professional outlook, for how this might be achieved. Although he acknowledges 'multiple realities' and the dominance of professional development realities, he does not address the social processes through

which particular knowledges gain legitimacy or dominance. Nor does he present a model of rural social change that incorporates these issues of knowledge and power.

More recent work concerning knowledge issues in development has focused on the clash of rationalities inherent in the development process, and the processes of negotiation that occur when different knowledges, between and among the developers and the developed come together (Long and Long 1992, Hobart 1993, Scoones and Thompson 1993). Norman Long (viz. Long and Long 1992) refers to these situations as 'interface encounters'. In Long's model, knowledge is a dynamic process, rather than an easily definable system or stock of thought. Knowledge also generates social change. This reassessment of knowledge has profound implications for how we understand the dynamism of cultures and communities, and for the significance of human agency. For Long (Long and Long 1992) the relevant point of enquiry is the interface between these knowledges and the processes of interpretation and negotiation that occur. Conflicting world views are brought together in the development policy arena in a struggle over the establishment of particular interpretations of the world, and in the establishment of particular models for action.

Long presents a framework for understanding local development processes, and how and why certain realities count more than others. As he writes:

> " ... if we take the view that we are dealing with 'multiple realities', potentially conflicting social and normative interests, and diverse and discontinuous configurations of knowledge, then we must look closely at the issue of whose interpretations or models (eg. those of agricultural scientists, politicians, farmers or extensionists) prevail." (Long & Long 1992 p.26)

It is not sufficient to merely recognise the diversity of worldviews that come together in the development process. As Long argues, it is also necessary to address how and why certain realities prevail. It is often implied in management literature that incorporating a range of worldviews in the policy process will inevitably lead to better policy (cf. Majone 1989). Such recommendations fail to acknowledge the

processes by which certain knowledges (or policy recommendations) become established. In natural resource management, these mulitple realities are not simply interpretations of the non-human world, but are prescriptive interpretations for the human world. This can be further illustrated by addressing competing explanations for environmental degradation.

2.ivb Explanations for Degradation of Natural Resources

The growing recognition of the knowledge and practice of rural people has generated a reassessment of causes of environmental degradation (Chambers 1994). Rural people are increasingly presented as being knowledgeable and able to adapt to rapidly changing conditions (Croll and Parkin 1992, Hobart 1993, Scoones and Thompson 1994, Ghai 1994). Increasingly explanations for environmental degradation incorporate external socio-economic factors, as well as the environment itself (Blaikie 1985, Bebbington 1994).

The case of fisheries, both marine and freshwater, raises a number of pertinent issues. Explanations for degradation of fishery resources (both marine and freshwater) have been based on environmental determinist notions of the relationship between the environment and human social organisation. According to McCay (1978), it has often been assumed that as with other CPRs, since fisheries covered wide geographical areas and were largely invisible that local property rights and management regimes could not be applied. Consequently local management regimes have been ignored or overlooked, and fisheries have been thought to be subject to a 'tragedy of the commons' (Hardin 1968). More recent interest in common property resources (CPRs) has highlighted the often complex and sophisticated local knowledge and management institutions that have operated (Ostrom 1990, Hviding and Baines 1994, Wade 1987). Rather than a cause of environmental degradation, common property regimes are presented as a response to such problems (Runge 1986). The collapse of CPRs is argued to be a result of market and state penetration, and the imposition of privatisation or state management regimes, rather than as an inevitable result of their communal basis (Ostrom 1990, McCay and Acheson 1987, Runge 1987).

Other writers have adopted a more critical analysis of resource management that moves away from environmentally determinist explanations for resource degradation. For them, management of natural resources is an inherently political process rather than a technical issue. For Bebbington (1994) the vulnerability of resource systems may be more to do with the political vulnerability of local management institutions and communities than with the biological properties of the resource system. By moving away from environmental explanations for resource degradation, a whole set of more overtly political issues are raised. For example, the political history of settlement of resource users, the relationship between local communities and the state, and such issues as land rights are brought into the analysis of patterns of resource use. As will be seen in the discussion of the case study of the Phru Khuan Khreng that will follow, these non-environmental explanations are of much greater significance.

The champions of common property resource regimes can easily slip into romanticising a lost 'golden age' of communalism. Perhaps the issue which is of greatest relevance for contemporary debates concerning CPRs is how such indigenous regimes cope with the external pressures brought about by development. In conditions of vulnerability the internal dynamics of how resource users generate a sense of shared interest become of paramount importance.

2.v Unified Ecology and Adaptive Strategies: The Particular Case of Wetland Fisheries

The theoretical framework as outlined above requires some modifications to deal with the particulars of the current case study of the Phru Khuan Khreng, and the context of environmental management and development in Thailand. The following sections will elaborate on McCay's (1978) model by focusing on issues more generally related to resource users, and to a reassessment of what is meant by resources.

In this section both the social constructivist model and 'people-centred ecology' will be developed further by addressing issues related to the definition of resource users, and of the concept of resources. An analysis of the development policy process as an arena of competing interests and actors will be presented in order to provide the setting for this current study.

2.va Resource Users

As the preceding discussion has stated, the contemporary context of planned development and societal change has generated changing social relations and organisations, drawing a number of actors and social arenas (state, market and community) together. As a result, it is more problematic to apply such traditional categories of social organisation as the 'rural community' or the 'village'. Indeed, one of the central dimensions of development and environmental management that this thesis addresses, is the process in which rural actors are redefining the categories of social organisation in which they are involved.

McCay takes the individual and household as her basic unit of analysis. It is from this point that analysis of notions of 'community' in which households operate should be made. As the preceding discussion on aggregating resource users to the level of 'populations' illustrated, there is a danger of assuming a degree of homogeneity and shared interest among resource users that is rarely in evidence. Rather, it is the intention of this thesis to illustrate processes of negotiation and conflict that may occur even in seemingly equitable local management institutions. The changing nature of the environmental and social resource bases is such that notions of community and shared interest are constantly being reassessed, particularly with growing intercommunal competition over scarce resources.

McCay's model of a people ecology makes repeated reference to the complex social relations and organisations in which resource users increasingly operate. Specifically she refers to government policy intervention, international fisheries concerns and to

the effects of changing markets, and their influence on fishing practice. Such wider social relations and organisations are also relevant to the Phru Khuan Khreng.

If the household is to be taken as the starting point for our analysis, the arenas of community, state and market in which households increasingly operate must also be incorporated into the model (cf Heady et al 1995). While local people remain the primary resource users of the Phru natural resources, the Phru is increasingly being incorporated into state plans for development (eg. as a waterbird park, as a freshwater reservoir), and into national and international environmental concerns for wetland, floodplain fisheries and biodiversity. These forces exert pressure on the Phru in disparate ways. Linkages through the spheres of community, state and market are increasingly significant for rural resource users. In periods of rapid change, often accompanied by increased conflict over declining resources and intensified economic stratification, the integrity of clearly defined communities becomes increasingly challenged. The effects of commoditisation and commercialisation on rural economies, and greater activity in external labour markets creates linkages and networks that go beyond the village. In order to comprehend the dynamism of the adaptive strategies, and implications of patterns of resource use for social organisation, it is therefore necessary to incorporate the wider arenas into which local resource users are being drawn.

The political history of settlement of the Phru and the effects of rapid development on the Phru communities and their relations to the State are complex. The state is increasingly becoming involved in the management of what were previously marginal areas. As the natural resource base becomes degraded generating scarcity and competition, these areas gain greater value. Increased state involvement also raises an important issue of the interconnections between how people understood their relationship to the environment, the economy of resource use and also how they understand the 'imagined' communities (from village to province to nation state) in which they operate. In the literature on development and rural Thailand, the validity of the basic category of rural community, the village has been extensively challenged (Kemp 1987, Hirsch 1991, Rigg 1991). For these authors, the emergence of the bounded territorial unit is as a product of state-led development and nation building.

It is largely a product of the state's security concerns, and bears no connection with any sense of an organic community. For Kemp (1987) anthropologists looking for the Thai village are chasing a 'seductive mirage'. As rural people increasingly find themselves in more complex networks of social relations so too does the potential resource base become more widely spread. Through migration, more extensive networks can be established so that the resource base may now be cast to any part of Thailand, Malaysia or even as far as the Middle East. For some, remittances from family who work in far flung places have become the most significant economic resource. As much as the village was ever a 'mirage', it becomes increasingly difficult to talk in terms of the territorial village as the basic unit of rural society. However, the village and the villager remains a powerful cultural construct, with profound and far-reaching resonances (Hirsch 1991, Masae 1996).

2.vb The Resources

The definition of resources and resource systems also becomes problematic. As has been discussed above, the definition of resource systems and their boundaries can be highly contentious. Environmental management tends to focus on the utilisation of environmental resources. In doing so it is possible to overlook how these resources are socialised, and also to overlook non-environmental resources.

The problem of defining a fishery in terms of its territory has been one of the main obstacles to marine fisheries biology (cf. Finlayson 1994). The potentially vast area of fish migration, and the wide range of environmental variables that may influence the fishery has been pointed out as a serious impediment. This is also true of floodplain fisheries, and indeed of wetlands themselves. The seasonal nature of floodplains is such that only a relatively small refuge area remains throughout the year. However, at times of flooding, the area inundated may be many times greater than the permanently inundated area. These issues become highly problematic in a wetland such as the Phru Khuan Khreng. Not only does the Phru flood to inundate a much wider area than the main forest, it also joins into the lake of Thale Noi which in turn joins into the Thale Sap Songkhla lagoon/lake and the surrounding floodplain. This issue of defining the

boundaries of the Phru 'system' has profound political ramifications and will form a major part of the later discussions in this thesis.

McCay's study on Newfoundland marine fisheries focuses on a 'people ecology' in which the utilisation of one natural resource (fish) is the basis of livelihood strategies. The overemphasis on studying one particular resource within wetland and floodplain ecologies is one of the problems that the original research project into the Phru Khuan Khreng/Thale Noi fishery faced. Indeed this is true of many studies of floodplain fisheries and is partly responsible for the historical neglect of such fisheries. The extreme environmental dynamism of such systems, from a lake to a parched grassland, and the relatively short flood fishing season (between one and two months) have led to an assessment of the fishery as relatively unimportant. On the other hand it is equally possible to attribute too much significance to fishery resources without appreciating how fishing fits in with other livelihood strategies. Multiple resource use is a prominent feature of livelihood strategies in many wetlands (cf. Vondal 1987). As will be discussed in the following chapters, while fishing may have declined in significance for the people of the Phru it has always been one of a number of natural resource use activities. In order to understand fishing practice, it is therefore necessary to have an understanding of other natural resources that rural people utilise.

Livelihood strategies do not only depend on physical resources. McCay (1978) argues the case for the need to consider the wider socio-economic context in which people operate. Perhaps the most significant aspect of such a widening of the scope of enquiry should be a reassessment of what is meant by the term 'resources'. McCay argues that we should not take the environment as the starting point of analysis but she maintains an analysis that does not consider resources other than natural resources. Although McCay talks of the wider socio-economic arenas in which people operate she does not discuss the resources that these arenas also offer. More recent work in development studies from the work of Sen (1981) and Swift (1989) regarding famine, and of Lewis and McGregor (1993) raises the issue of looking at social, political and economic resources as well as simply material resources (cf. Turton 1989).

Lewis and McGregor (1993) present a model of 'resource profiles'. They not only include material, human and natural resources in their 'resource profiles' but also what they term 'social' and 'cultural' resources. Social resources are presented as social relations in three social arenas; relations with the market, in the community and with the state. As they (1993) write:

> "Throughout their activity households build up relations with other households or organisations which can be used to maintain or improve their situation. These might include relations in the market (eg. with particular traders, shopkeepers etc), relations in the community (with richer neighbours or patrons, village leaders etc) and relationships with the state (with local politicians and bureaucrats). The relationships may be employed at a particular time to advance the position of the household." (Lewis and McGregor 1993 p.10)

Their definition of cultural resources refers to 'factors affecting the status of the household' (p.11). Inevitably factors determining perceptions of status vary according to the specifics of the culture, and in a specific rural context such as that of the Phru Khuan Khreng, to such diverse ephemeral notions as knowledge, religious virtue, criminal proclivity, courage, honesty and alcohol consumption. It is important to note that this category of resources is not only vague for the authors, but also for people themselves. Inherent in these perceptions of status are such diverse and ambiguous notions of what is a good or powerful person, and worthy of respect or fear. While these notions are perhaps vague they nonetheless occupy a great proportion of people's time in developing social relations in the formal or informal arenas. This type of status is always under scrutiny and open to interpretation and negotiation. For example, in such a situation it is conceivable that one inappropriate or 'immoral' act can jeopardise a life-time's accumulation of status. This is particularly significant when individuals are balancing competing viewpoints or factions. Often personal self-interest must be balanced by perceptions of community status.

By implication, a weak material resource base may well be compensated for by a strong set of market, state or community relations. For example, in a market-orientated rural economy, connections with market traders may more valuable than the capacity to extract natural resources. In a resource system that is increasingly governed by state regulation (eg. in a national park) influence with the state mechanisms may have more influence than simple ability to extract natural resources. This point is of particular importance for rural Thailand and the Phru Khuan Khreng. Many authors have highlighted the significance of personal relations, and particularly the relationship of patron and client (Rigg 1991, Turton 1989). Investing in these relations occupies a great deal of people's time and effort. A common manifestation of this phenomenon in Thailand is the lavish expense of maintaining social links with superiors and subordinates, and with gaining prestige, status and influence. Such expenditure is an investment in social resources. As Turton (1989) writes:

> " Much of this (*ie. lavish social expenditure*) is geared to establishing and reproducing social relations with strategic superiors and subordinates in order to enhance political and economic position, to secure lucrative offices and contracts, to gain protection for illegal economic activities, and to accumulate political and economic clients." (1989 p.83)

It will be argued that the current context is such that access to non-material resources (such as social and cultural resources) can be of greatest significance. As Turton notes (1989) notes, even control over productive forces of land and labour can be undermined if people do not have control over such factors as " finance, inputs, technology, information, decision-making, transport, processing, storage etc " (p.74). In particular, influence with local power bases (formal and informal village leaders, police and government officials) can be the basis of accumulation and greater control over processes of production.

McCay (1978) implicitly recognises the significance of a range of resources as part of fishers' 'adaptive strategies' in her references to 'multi-job strategies', 'diversification' and 'intensification'. However, she does not explicitly recognise such non-material

resources as Lewis and McGregor (1993) refer to in their 'resource profiles'. This is not simply an oversight on McCay's part but a more profound theoretical flaw. An important aspect of planned development, particularly in the current climate of conservation concerns, is the establishment of new management regimes creating hierarchies of decision-making, and rights of access. These structures become important resources in themselves, and create alliances of interest that transcend the village community and the state.

2.vi Development and Environment Policy

It is in the arena of policy for environmental management and development that different actors and different understandings of the environment are most explicitly drawn together. As McGregor (1991) notes:

> "In a basic sense, policy can be viewed as the means by which the state is translated into action, while at the same time, from the perspective of the people, that action is itself one of the most tangible manifestations of the state." (McGregor 1991 p.95)

In the interests of developing a model of 'people ecology' as advocated by McCay issues of policy will now be addressed. It is not intended that this section be a comprehensive analysis of environmental or developmental policy. Rather it is intended that this section will provide a context in which human ecology must be placed.

As has been said previously, the processes of planned development and increasingly of environmental management provide the arena in which local resource users now operate. It is in this arena of policy that the state and people are most closely brought together. Development and environmental policy not only seek to manage the non-human environment, but also patterns of social relations and organisations, and resource use patterns. As such, policy relies upon conceptualisations of the environment and of society, and of solutions and problems (cf.Wood 1985). In the

field of natural resource management, policy has increasingly adopted a technocratic and scientific discourse that obscures the political and distributional dimensions of such policy. An important aspect of this thesis is the ways in which policy is contested and negotiated.

2.via The Policy Arena

This thesis adopts a perspective on development and environmental policy as an arena (cf. Long & Long 1992) in which different political and social interests, and actors compete. It is the argument of this thesis that environmental management remains an issue of access to and distribution of resources. However, the technocratic discourse that dominates development policy generally, and environmental policy in particular, obscures the inherently political dimensions to policy (Ferguson 1990). The environment is not only culturally constructed and imbued with meaning and significance by rural people. The epistemic communities of policy makers, development practitioners, government workers and departments also construct their own 'culturally specific' interpretations of the environment. Policy is concerned with the establishment of particular worldviews as orthodoxy, with legitimising hierarchies, alliances and power relations between and among the state and people (cf. Apthorpe 1986, Clay and Schaffer 1884, Long & Long 1992, Hobart 1993). It does not operate in a vacuum but serves particular interests. However, in an 'interface' analysis (Long 1989, Long & Long 1992) these interests are constantly negotiated and reinvented.

In defining problems and solutions policy legitimises the rights and capacities of certain actors as agents of policy (Apthorpe 1986, Wood 1985,). The altruism of policy makers, government departments and even NGOs and academic researchers cannot be assumed, but should itself be analysed as a mechanism of legitimation. Recent analysis on the state and its role in development policy has highlighted the internal competition between government departments and ministries (cf. Tongsawate and Tips 1988). Elaborating on Robertson's (1985) model of the relationship between the nation state and development, policy not only evokes but requires specific

departments. Government departments define policy problems according to their own departmental remit. Thus, for example, a forestry department may define a problem purely as a technical forestry problem, while a community development department may define the same set of issues as a problem of access to land or credit. Often government departments comprise workers with a limited training in the specific discipline of that department (eg. fisheries, irrigation, forestry). Their capacity to translate issues beyond the confines of their own scientific training and epistemic communities is limited. As van Ufford writes:

> "The definition of a particular problem of development is closely related to, and constrained by the nature of the specific capabilities of the various development agencies involved. Definitions of development are vital 'symbolic capital', which is carefully tended by the agencies. These 'analyses' should not be seen as equivalent to a disinterested, scientific analysis. On the contrary, the capacity to control definitions of what is supposed to be happening locally is of the utmost importance to the agencies as, in a way, they contitute their organizational identity and their 'logo' in the development market." (van Ufford 1993 p.140)

Government departments are often competing for portions of a limited budget. If there is no work for them, no problems specific to their institutional remit, their access to the budget may be jeopardised. In short, with no problems there are no projects, and ultimately no funds.

2.vib Clash of Rationalities: Science and Indigenous Knowledge

There has been a recent explosion of interest within development studies in knowledge issues. Much of this interest has focused on local people's knowledge, but it is also necessary to address the knowledge of the development practitioners. In particular, it is necessary to address the role of science in natural resource management policy. As has been said earlier when knowledge and action are placed

in the realm of the natural they take on connotations of truthfulness, inevitability and neutrality. Thus a knowledge that claims to reveal nature itself, and not a culturally determined representation has great political significance. It delegitimises other knowledge, and generates technocratic analysis and policy that is almost immune from criticism. In the field of natural resource management and development it allows for what Habermas referred to as the scientization of politics (Habermas 1971). It also allows for the politicisation of science as science increasingly becomes the arbiter in political decisions about natural resource management and resource distribution.

Science claims that the knowledge of the universe that it reveals is not comparable with any other type of knowledge. It claims to reveal the world as it is, and that this is a world that obeys fundamental immutable laws that are universally applicable, and which a neutral scientific observer can uncover through empirical observation, replication and validation (see Douglas 1975, Collins 1985). The sociology of scientific knowledge (SSK) argues that for both internal and external reasons (ie. for reasons concerned with fundamental principles of scientific method, and because of the ways in which science and scientists are bound in social and economic relations) the 'exceptional' status that science assumes for itself can be challenged (Collins 1985, Yearley 1989). In decoding scientific representations of the world we must therefore uncover what factors influence scientific interpretation, by considering science as a cultural practice (Pickering 1992).

An uncritical acceptance of scientific knowledge as the foundation of policy can ignore the internal and external processes by which scientific truth becomes established. It cannot be assumed that the pursuit of scientific knowledge is evolutionary, and that scientific truth constitutes the best possible truth available. In natural resource management policy, scientific data and information can never be neutral as they are by definition prescriptive. As such they require interpretation within specific institutional frameworks, and ultimately with distributive objectives. Recommendations for the inclusion of multiple realities and knowledges into the policy process can also be guilty of similar assumptions concerning the processes by which orthodoxy is established. Even if multiple realities are incorporated into the policy process, the adoption of policy recommendation (ie. the establishment of a

policy orthodoxy) cannot be assumed to be because it represents the best policy.

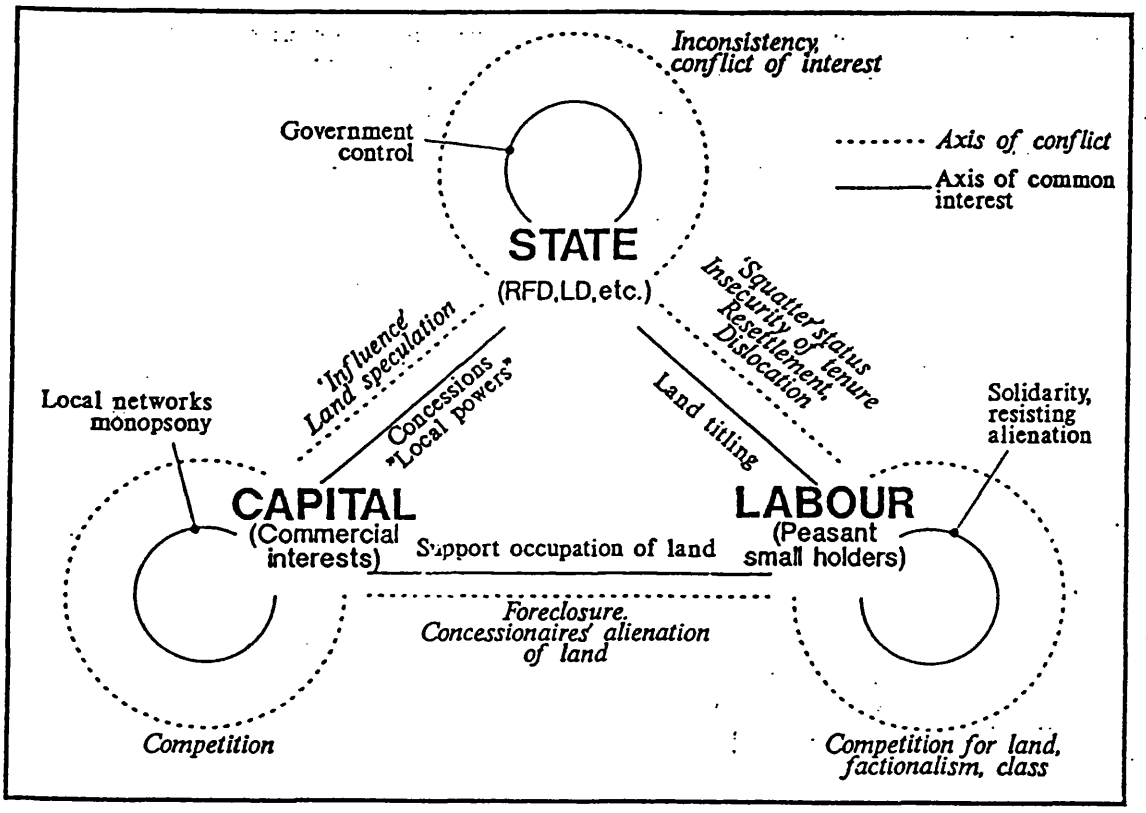
How science deals with socio-economic issues is of great relevance for this research. In his discussion of the scientific assessment of risk associated with the use of pesticides in agriculture, Wynne (1989) introduces the concept of 'naive sociology'. He argues that the conditions upon which such calculations of risk are made are replicable in the controlled environment of the laboratory but have little relation to the realities of agricultural practice, or to the willingness or ability of pesticide users to follow manufacturers' instructions. For example, safety requirements may be so elaborate that they cannot be incorporated into farmers' daily routines. Wynne argues that a naive sociology makes assumptions about the social world that may not hold. For example, the safety and efficacy of a large infrastructural project (eg. a complex irrigation system or nuclear power plant) assumes the institutional capacity to manage the system, and the socio-economic stability that guarantees management regimes can be maintained. However, these socio-economic variables are not adequately assessed, even though they are the most likely to undermine the project. These issues will be discussed in relation to large-scale management proposals for the Phru. These proposals depend on the continued viability of specific socio-economic conditions, particularly of continued industrial and urban growth (see chapter eight).

2.vii Analytical Model

The analytical framework applied in this thesis draws on many influences.

The influence of wider social arenas on local patterns of resource use is examined by Hirsch (1990). In his analysis of resource use in reserve forests in Thailand, Hirsch (1990b) presents a model of a 'political economy of local resource use' (p.171). This model is designed specifically for analysis of the resource use patterns in reserve forests in Northern Thailand. The situation is quite different from that in Phru Khuan Khreng, but important similarities remain. The Phru Khuan Khreng lies within the Thale Noi Non-Hunting Area and large areas of forest surrounding the villages of this study are classified as reserve forest (*paa so-nguan*). Conservation in the Phru Khuan

Khreng as in many other parts of Thailand is based upon notions of reserves and restrictions on local economic activity. However, the forests investigated by Hirsch are more actively exploited by outside capital interests as well as local resource users. While these external capital interests certainly do operate in the Phru Khuan Khreng they do so to a far lesser extent. Hirsch's model is reproduced below.



The political economy of forest reserve land

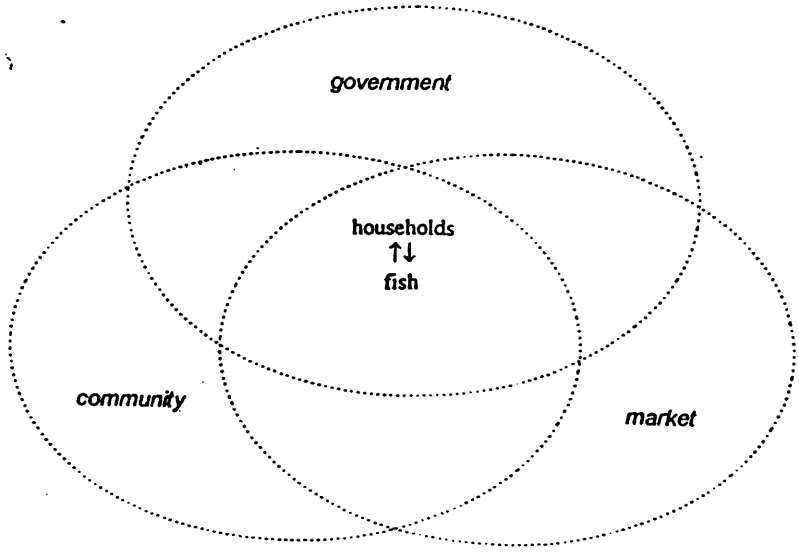
Hirsch explains the model as representing...

> "the triad of political economic interests concerned with forest reserve land. Relations between each set of 'actors' are governed both by axes of conflict and by axes of common interest. It should be noted that since each pole represents a heterogeneous set of actors, commonality and conflict of interest are internal as well as external." (Hirsch 1990b pp.171-172)

Hirsch manages to incorporate the main sets of actors, and to portray the conflict and shared interest that may exist between them. Significantly, he also emphasises the heterogeneity, dynamism, and potential conflict and shared interest within each of the categories of state, capital and labour. These dimensions are also of relevance for the case of the Phru Khuan Khreng. However, there are limitations to the applicability of Hirsch's model that require further elaboration.

Hirsch's model attempts to explain the "power relations that determine access to and control over local resources" (p.171). However, what it does not set out to do is to explain patterns of local resource use and the socio-economic factors that influence such resource use. Nor does it attempt to explain the relationship between resource use (whether environmental or socio-economic) and social organisation. These are significant omissions, for all that such a model of the political economy of reserve land can hope to do is to illustrate the actors exerting influence in forest reserves. Despite Hirsch's assertion that to "understand tropical deforestation not just as a global bio-physical problem, it is important to examine local and specific social processes " (p.173) it is these very local processes, and the dynamism of the physical and socio-economic environments in which they occur that he fails to address.

In contrast to Hirsch, the starting point for this research is the individual resource user or household. The schematic representation of the model below derives from the model applied in the original ODA fisheries research (Heady et al 1995).



This schematic presents individuals' and households' relationship with the environmental resource base as the starting point for analysis. The three social arenas in which individuals and households operate are presented as overlapping circles. This illustrates how all three spheres of social action impinge on households, and yet how each of the separate spheres can have a particular interconnection with another sphere; eg. the state with the community, or the market with the state. In the original model (see Heady et al 1995) these spheres represented distinct areas of influence on policy as it manifests itself at household level. Although focusing on fishing, the Phru Khuan Khreng is characterised by multiple resource use. As discussed above, this research has adopted a definition of resources that includes social, political, economic and cultural resources as well as material and environmental resources. For the model utlined in this thesis, the spheres of state, community and market must also be taken to represent spheres of resources. This model is applied throughout this thesis and has inspired the way in which the following discussion is structured. In the final chapter the linkages between these social arenas, and households will be developed further.

CHAPTER THREE

METHODOLOGY

3.i Introduction

The processes of collecting data in the field and of writing the research into a standardised academic format, is a craft that is shrouded in its own mythology and mystification (cf. McGregor 1991). So much so that the human dimension that lies at the heart of anthropological enquiry is often obscured. Anthropology and the 'quick and dirty' methodologies that it has inspired in the field of development studies (eg. participatory rural appraisal techniques) rely upon human interaction. As Gudeman (1990) notes, a whole range of 'field skills' is required. Many of these interactive 'skills' are of a highly personal nature. While the interaction of fieldwork is often supposed to be of a scientific and objective form, there is an important question as to the capacity to translate the myriad of social action, and the extent to which the very presence of the researcher actually influences that which is being researched (cf. Long and Long 1992, Booth 1994, Schurman 1993, Drinkwater 1992, Hastrup 1995, Scoones and Thomson 1994, Chambers 1992). On a more personal level, it is very often the case that the most significant and revealing insights during fieldwork come through such unscientific interaction as friendship and trust. The recent interest in postmodernist concepts of reflexivity has brought the experience of fieldwork and of writing-up to the forefront in discussions of ethnographic methodology (eg. Long and Long 1992, Drinkwater 1992, Pool 1991). Increasingly there are calls to incorporate the researcher as a 'visible actor' in the research process (Drinkwater 1992). Yet there is a limit of professionalism (and perhaps sentimentality) that determines how much of the researcher's own personal experiences, prejudices and interpretations are revealed. It is in the spirit of Long's calls for an 'actor-oriented' methodology (Long 1992) and Drinkwater's call to make the researcher as 'visible actor' that the following discussion of methodology and the fieldwork experience is written.

I was given a great deal of advice by a number of doctors of anthropology and development practitioners. Some of this advice was honest and helpful, but much was also deeply disillusioning. The problems of adapting to the physical hardship of life in

rural Thailand, and the emotional vulnerability of living in an unfamiliar environment with additional problems of language were all raised. But these obstacles and hardships are the rites of passage for the anthropological researcher and as such were rarely argued to be insurmountable. However, I was repeatedly told, in an only slightly condescending manner, that this all depended on time.

The restrictions on my time as defined by the nature of my research grant meant that I only had eighteen months in Thailand. Of this eighteen month period, the first three to six months were to be spent in class and in situ working on my language skills. This would allow for a maximum of twelve months 'in the field'. I realised that from the outset I could not hope to gain the range of detail and depth of insight that a 'real' piece of ethnography (ie. a ten year ethnography) could produce. This realisation was a constant source of anxiety throughout the research. Inevitably my fieldwork, as with any similar work, relied upon 'unscientific' skills of interpretation and translation. Often accidents, unanticipated events and casual remarks provided valuable experience and insight. However, this research is not intended to be a complete picture of the Phru. Indeed, it is founded on a belief that such a thing is never possible. This research is rather, a particular interpretation of life in the Phru. It is a snapshot that reveals only a partial picture at a particular point in space and time. In this way ethnography suffers the limitations of any positivist enquiry. More importantly, this research presents an analysis of a particular set of issues, and in doing so, it presents a framework for looking at a series of interrelated processes of social and environmental change. It could never hope to be *the* way of analysing these processes of change, as much as it could never hope to be *the* interpretation of life in the Phru.

In presenting a discussion of the theoretical issues concerning methodology, and a personal account of the experience of fieldwork I am not solely concerned with excusing the shortfalls in the research. My time in Thailand and in the Phru in particular, was rich and varied. The friendship, generosity and hospitality of the many people I met enabled me to conduct my fieldwork, but more importantly enabled me to avoid too much of the emotional stresses of fieldwork. Had it not been for this

friendship and trust the fieldwork and the insights it generated would not have been possible.

3.ii Theory and Practice

Methodologically this research owes its greatest debt to the work of Norman Long. The research aims to investigate the relationship between understandings of environment and community, and the significance of these understandings in forging new social relations and structures. Central to this approach is an understanding of human agency; being partly conditioned by the social context in which the individual actor operates, but also allowing for the individual influence in shaping social structure (Long 1992, Long & van der Ploeg 1993, Hastrup 1995, Drinkwater 1992). It is an approach that is based on the belief that social change (particularly in the area of planned development) is not solely determined by structural factors, nor solely by the agency of dominant political forces. Long's understanding of agency emphasises issues of knowledge and power, and takes on board the actions and worldviews of 'local people', the 'weak' (cf. Scott 1985), and the targets of development.

In order to appreciate the dynamism of social relations and structures, and the significance of the individual actor in shaping wider processes of change, Long advocates an 'actor-oriented' methodology. As Long writes:

> "Underlying our analysis is the conviction that a sociology of the everyday life of actors involved in shaping the processes and outcomes of rural development programmes is needed if we are to develop a more adequate understanding of the significance of the human agency in such situations." (Long and Long 1992 p.244)

This methodological approach requires detailed anthropological enquiry and information in order to gain a meaningful understanding of the internal worlds and everyday life of actors. It also requires a detailed understanding of the wider structural context in which these actors operate.

As the discussions in chapters one and two have illustrated, an actor-oriented approach is of particular significance when focusing on primary natural resource users in the context of rapid change and planned development. The processes of change in the Phru are such that the relations and structures between individuals, households and communities, as well as with the wider arenas of state and market, are now in the process of being renegotiated and reinvented. The crucial variable in this analysis is of planned change. This planned change operates on two distinct yet intertwined levels. On one level is that of formal planned development; largely the responsibility of the state and manifest in projects, policies and the presence of specific local government officials. On another level, are the activities and knowledges of local people in adapting their own livelihood strategies and in renegotiating the interventions of the state. This situation is an example of what Long (1989) refers to as an `interface' encounter....

> "...involving social actors with divergent interests and values. In the field of rural development, these interfaces often occur where government or other outside bodies intervene in order to implement a particular development policy or to assert politico-administrative control over an agrarian population and its resources." (Long 1989 p.221)

Processes of change are being affected at the local level by individual actors, whether they be villagers or government officials. Policy at the local level can not be fully comprehended by recourse to national policy commitments. Equally the uncertain manifestation of policy outcomes requires a detailed analysis of local conditions. This requires an analysis of social action and also of the knowledge and worldviews of particular local actors. The emphasis on internal dimensions of social action presents its own methodological challenges.

In a case-study such as that of the Phru Khuan Khreng, identifying the significant interfaces is problematic. There are a number of government departments operating at different institutional levels, and at different geographical sites within the Phru. As

part of the wider lake basin the Phru is also influenced by broader policy. The starting point for identifying interface situations was therefore the villages themselves. This simplified the issue of identifying the key players in the villages, but it was also clear that to place government workers in context required tracing the network of interfaces in which they operated; for example, at different types of meetings, with different government departments, and with their superiors. The hierarchical structure of policy-making in Thailand creates a number of interfaces that links policy from Bangkok to the village. Repeated trips to Bangkok were made in order to interview the higher echelons of the bureaucracy, but it was not possible to trace the full extent of these interfaces. Indeed, the actor-oriented methodology has not overcome the problem of defining the boundaries to the field of enquiry. The complex network of relations between local and national policy-makers, as well as between local people, would require a vast map of interfaces, that would not be pragmatic.

A number of specific research techniques were employed in order to acquire the detail of a 'sociology of the everyday life' required by an actor-oriented analysis. Long (1989) identifies a number of research techniques that can be utilised in case-study methodology. These will be summarised below.

Long (1989, and Long 1992) advocates techniques that focus on three distinct areas: the individual's personal and structural background, knowledge and worldviews and also the networks and social arenas in which they move. Life histories and biographical profiles are recommended in order to give the case-studies a context in which their ideas and actions can be placed. Long also recommends a type of network analysis (cf. Mitchell 1969) which he refers to as 'activity field and social field analysis'. This is a means of analysing how actors build up their own field of social action, that is not solely dependent on institutional frameworks (see Long 1989 p.252). Such an analysis generates a picture of case-studies as people rather than 'occupants of particular statuses' (Van Velsen 1967 p.141 quoted in Long 1989). This also requires analysis of a diverse range of social situations. Finally, in order to penetrate the knowledge and worldviews of actors Long advocates the use of discourse analysis, and the use of folk models and cognitive maps. These are

representations of idealised local models and how these idealised models are reinterpreted by individuals.

Eliciting and translating the beliefs and knowledge of the objects of anthropological enquiry does not merely imply presenting an oral history. The objective of this research is not simply to present an aggregation of the worldviews or belief systems of the people of the Phru Khuan Khreng. Rather, it is an attempt to penetrate the internal dynamics of widely held beliefs, and the processes by which notions of norm and orthodoxy within shared ideas are established, negotiated and reinvented.

In focussing on knowledge of the 'environment' one must confront the epistemological and methodological challenge of not imposing particular cultural constructs. Notions of the environment have particular cultural connotations, not necessarily shared by researcher and the researched. As the diverse literature on indigenous knowledge repeatedly comments, much of the knowledge of local people is embedded in their everyday action (van der Ploeg 1993). Environmental knowledge is not necessarily easily isolable from other types of knowledge, such as technical or ritualistic knowledge. Knowledge is often so much a part of the everyday activity of people's lives that it is taken for granted. Many techniques for eliciting local understanding were therefore employed, such as mapping, time-scales, calendars. However, these were often unfamiliar means of expression and were not always appropriate. For example, for the majority of respondents drawing maps was an unfamiliar exercise, and an unfamiliar way of representing space. Even so people were able to respond in their own way, and present their own issues. The use of calendars to present seasonality of resource use raised a very important issue ie. that resource use depends on environmental phenomena (eg. rain, water levels) more than the month of the year. This raised the whole issue of uncertainty and adaptability that is such a prominent feature of many people's resource use strategies. Those who were most able to clearly state their calendar of activities were those who depended least on the vagaries of environmental conditions.

The role of the researcher in the making, translation and interpretation of the story of fieldwork has been recently targeted in discussions of 'critical hermeneutics' and

reflexivity (Drinkwater 1992, Pool 1991). In brief it can be said that this literature calls for the inclusion of the researcher as a 'visible actor' in the research process, not only as an interpreter of social action, but also in generating particular social action (see especially Drinkwater 1992). As Drinkwater notes in his discussion of the implications of adopting an actor-oriented strategy that acknowledging the significance of human agency must also be extended to the agency of the researcher.

> "If one lauds the ability of the participant to 'make a difference' to his or her own world, then it is inconsistent not to acknowledge the equally active nature of the researcher in shaping the fieldwork encounter and hence the role the researcher plays in the selection and interpretation of field material." (Drinkwater 1992 p.368)

In confronting the issues raised by calls for greater reflexivity, I will relate my own interpretation of my role as researcher.

3.iii In the Village

As an outsider going into a village to conduct research one is necessarily to be perceived in ways out of one's own control. This is unavoidably the case when one enters a remote part of rural Thailand as a clearly discernible European foreigner. This presents many disadvantages in terms of ease of cultural adjustment (cf. Masae 1996), but also I believe several significant advantages.

At the time of my fieldwork no foreigner (*farang*) had ever stayed in the village or spoken directly to the villagers. Most people had encountered a *farang*; as tourists in Thale Noi or in other parts of Thailand where villagers had visited, or on television. Several *farang* had been involved in the original floodplain fisheries research project. As a result I was able to establish my connection with a project that was known about and was well regarded. I was also able to identify myself with a group of foreign researchers and with the well-known institution of the Prince of Songkhla University, with which the research team had been affiliated. In this way I was able to

enter the villages with an easily understandable identity, and also able to explain my research interests.

It would be foolish to deny that in the early stages of the fieldwork I was something of a curiosity. I was excused my stumbling Thai and my mistakes were turned into jokes. I was tested to see if I could eat the local cuisine and drink the local moonshine, and I was constantly quizzed about all aspects of life in England. Often people went to considerable lengths to explain an aspect of Phru life that I did not understand. And as a result of the overriding hospitality of the people I was frequently confided in, as well as being taken to countless weddings, funerals, parties, and meetings. These occasions helped to reveal some of the networks and different social arenas in which local people move. It also prevented an overemphasis on fishing to the exclusion of other economic and social activity.

The nature of my research was such that I was involved in a potentially politically charged situation. Neutrality was an ideal for which I constantly struggled, but perhaps often failed to attain. On a theoretical level it has been argued that this neutrality is indeed never possible (cf Drinkwater 1992). At times my professional and personal motives in being in the village were questioned. When I first went to the village I conducted a sample questionnaire. This provided important background information and gave me a legitimate reason to travel around the village and meet most of the inhabitants. Villagers had been questioned in this way before, although usually by Thai students and were used to the questionnaire format. I was able to explain what I was doing in the village, and emphasised that I wanted to understand the lives and knowledge of the locals. This usually inspired a very positive response. It was often remarked that most government decision makers rarely made the effort to understand the position of *chaow baan*. It was said that they never stayed in the villages, and never ate and drank with the people. That I was willing to seemingly travel so far to do so was usually considered to be commendable. Typically when first introduced to someone in an informal environment (most frequently as 'Richard the Englishman who has come to learn about the environment and lives of *chaow baan* in the Phru') I would be treated to an unsolicited oration, and question and answer session. Far from all reactions were so favourable. My motives for being in the

villages were frequently doubted. Fortunately, only on one instance was I accused of being a spy. However, in one instance a middle-aged lady with whom I had regularly talked remarked, ' I know what you're doing here, Richard. You'll collect all your data, go back to England and get your doctorate. Then you'll get a good job with a big salary and forget all about us'. I did not attempt to defend myself from charges I also made of myself.

Anthropology prides itself on its specialist ability to penetrate the lives and worldviews of ordinary people (cf. Croll and Parkin 1992). Long term residence in the field is the defining method of the anthropologist. However, I would argue that contemporary conditions are often such that this is not always possible, nor desirable. Greater assimilation into village life can become a process of narrowing and intensifying one's sphere of movement. By staying in the village one necessarily develops relationships with particular people, and over a prolonged period of time is increasingly identified by recourse to village-specific referents.

In order to avoid being too closely drawn into a particular family or social circle (*glum*) I was obliged to move from household to household, and therefore from village to village. Neither village was able to offer rentable accommodation. In Baan Paa Sombuun I invariably stayed with the deputy village headman. While this perhaps compromised my neutrality, the physical difficulty of getting around inevitably made me dependent on people with boats. It would not have been possible to reside in such a village and bypass the formal structures of authority. These difficulties contributed to Baan Paa Sombuun becoming the secondary focus of the research.

In Baan Glaang Phru I was able to stay in a simple room in RDF headquarters. Again I was aware that too close association with the RDF would be undesirable. However, the ability to move around the village independently by motorbike gave me infinitely more contact with a wide number of people. The RDF offered the only form of accommodating for someone visiting in a semi-official capacity such as myself. As the whole of the area fell within the jurisdiction of the RDF as a part of the Thale Noi Non-Hunting Area I was obliged to accept their initial hospitality. To have done otherwise would have jeopardised my own position and risked being accused of being

a trouble-maker. I also had to bow to the legitimate concerns regarding my own personal safety in an area where violent incidents are not beyond the realm of possibility. The full extent of concern for my welfare while in the villages only became fully apparent towards the end of my stay. All local RDF staff were from Baan Glaang Phru and their own general concerns for the respect of local practice and knowledge did not conflict with my research interests. I was often encouraged to gain access to a range of opinion in the village. Gradually trust was established so that most people spoke freely with me, although I have to acknowledge that I could not claim universal access to all the villagers. At the same time, I realised that the RDF staff were themselves significant local actors in the management of the local environment, and the point of access to other external management initiatives. However, no one person can gain equal, universal access to all villagers, and I have to accept that inevitably my interpretation of Phru life is necessarily partial. As a single male there were obvious limits on my movement in the village. It was often awkward to interview women, particularly if they were single or divorced, and I am aware that the research suffers a 'gender bias'.

It was also necessary to spend some time with the institute with which I was affiliated, the Coastal Resources Institute (CORIN) at the Prince of Songkla University, collecting secondary data, and interviewing government officials. Indeed it was expected in the village that as a visiting researcher I should do so. This was compounded by the belief that most of what I did in the villages, (ie talking to people) did not really constitute work. My typical routine consisted of stays of two weeks in the villages with one or two weeks at CORIN. During the periods of flooding and harvesting of pond traps the stays in the villages were extended to three to four weeks. The time spent at CORIN was an essential means of placing the Phru in a wider context. It also gave me access to numerous Thai academics working on related issues.

3.iv Practice: Conducting the Research

In both villages, the first step in carrying out the research was to conduct a round of questionnaires. This questionnaire was printed in Thai and all responses were

recorded contemporaneously. Provision was made for pictorial representation of environmental phenomena such as fish migration patterns, areas of high acidity, fishing grounds (cf. Scoones and Thomson 1994). The minimum these initial interviews provided was general background information (of household size, economic activities, general perceptions of environmental and social change), but often went far beyond the limitations of the printed questionnaire. As continued to be the case, the most useful information was provided 'off the record'.

In Baan Paa Sombuun it was possible to interview all resident households. As the composition of the village altered seasonally I was able to interview additional households. In Baan Glaang Phru the size of the village prohibited interviewing all households and a random sample was carried out by interviewing every fifth household. This too was supplemented by interviewing other households who had not been resident during the first round of interviews. From these initial interviews case-studies were selected. I returned to each of these case-studies repeatedly over the following months and gradually developed a good rapport with most interviewees. The nature of the relationship that was established, the circumstances in which many of the conversations were held (eg. in a fishing boat) and the topics that were discussed were such that they were of a 'semi-formal' structure. This meant that the conversations that constituted the interviews were not determined solely by my interests, but flowed freely. Often, however, it was not possible to take contemporaneous notes. I summarised the conversations as soon after they took place as was possible.

Many other informative conversations took place in completely unprompted situations, often in group situations. An important feature of Thai social life are the eating and drinking circles (*wong lao, glum* or *pak phuak*). It is in these groups that many networks and alliances are formed. The ability to move from *glum* to *glum* proved to be, among many things, an important social mechanism for gaining status and influence for the villagers. It was often awkward for me to turn down invitations to eat and drink with one *glum* rather than another. Gradually, as my novelty status in the villages wore off and my own confidence increased, I was more able to socialise with a number of different *glum*. These 'informal' gatherings proved to be one of the

most important means of gauging local opinion and of penetrating the maze of social networks in the village.

Village life is punctuated by frequent meetings of varying degrees of formality. These were useful for finding out important local issues, and also for indentifying key political actors. The *glum anurak* were an important interface between the village and the state (see chapter eight). Official visitors involved in anything environmental were entertained by the local *glum anurak* (see chapter eight), and the *glum anurak* were always involved in meetings at the Thale Noi Non-hunting Area.

Despite the desire for objectivity every entrant to a relatively closed social arena such as the villages of the Phru, arrives with some background story. No-one enters another social arena without some sort of baggage, whether of their own or of the locals' making. While this is unavoidable, its significance must be recognised. Remaining in a village requires being able to take part, not necessarily as a permanent member, but as someone who is at least at times,'of the village'. At times, one can be identified by residence in a village. Sometimes my association with a village was proudly displayed in an outside social gathering. The position of the contemporary European anthropological researcher is much different from that of the anthropological pioneers. The right to be in the village conducting research cannot be assumed, as it might have been at one time. As a European one is inevitably correctly seen as being privileged, and at best only a temporary resident of the village and the country. Reciprocity is a necessary ingredient of human interaction. The visiting researcher cannot avoid this, even when this may appear to conflict with a rigid programme of research. Inevitably the researcher can never be a completely neutral figure, and can never operate without becoming to some degree a part of that which he researches.

3.v Out of the village: Government workers

In an attempt to draw a number of significant actors into the research, it was also necessary to include several local government officials, as well as central policy makers in government departments in Bangkok. Several trips were made to Bangkok

to interview officials in the Departments of Forestry and Fisheries, as well as in the Office of Environmental Policy and Planning. These meetings were arranged through CORIN, and were largely conducted in English. A number of province (*jangwat*) level officials were interviewed from the Departments of Forestry (RDF), Fisheries (DOF) and Irrigation (RID).

A series of meetings, workshops and seminars were also arranged by CORIN and the research team from the University of Bath. These were intended as a means of disseminating the original ODA research findings and analytical framework to concerned parties (see Heady et al 1996). The meetings in Bangkok, at the university in Hat Yai and finally at the village of Thale Noi were of great value to my own research.

3.vi Language

The most obvious difficulty the foreign researcher has to confront is that of language. The pre-requisite of any research that requires interviewing people is clearly fluency in the local language. This is something that can only ever come with time. Having previously worked in Thailand for over a year, and after having taken further classes in England in preparation for my research, I already had a reasonable level of proficiency when I arrived to commence the fieldwork. On arrival I spent three months taking formal classes in Thai, including reading and writing. It was only on arrival in the villages that I began to appreciate the differences between the standard Thai (*phasaa glaang*) that I had been studying and the local dialect (*phasaa thong tin*) of Southern Thai (*phasaa dtai*) that people spoke in the villages.

In the early stages I was reliant on those who spoke *phasaa glaang*, but more significantly, once again on the good humour and patience of the villagers. After time, I was more able to adopt some of the local accent and dialect; at least to the light-hearted satisfaction of many of the locals. I was able to converse freely but following much of casual conversation in *phasaa thong tin* proved difficult or impossible. Often people had to break from conversation to explain something to me

in a simpler way. I am aware that the limitations of my linguistic ability influenced the language of my interviewees. The majority of key informants tended to be those who were able to communicate in *phasaa glaang* or in a clearer form of *phasaa thong tin*. This relied more on their own patience than on such factors of levels of education. However, many other key informants seemed to make no allowances for my levels of fluency, but were equally intelligible. Often attempts by groups of people to explain something to me generated an interesting discussion of the issues among the conversants. This itself often proved to be an important source of information.

3.vii Questions of Reflexivity

As has been discussed above, recent calls for greater reflexivity in social science have lead to a reassessment of the role of the researcher as an actor in the arena of fieldwork. However, the role of the researcher extends far beyond the field. The type of analysis which I am outlining in this research, in which the knowledges of a range of actors, also requires a critical self-examination of the production of this thesis. This is necessarily the case in order to respond to the frequently voiced questions in the field concerning the ultimate purpose and value of this research.

All research must start from somewhere; very often this is not the same place that it ends up. One is often caught between imposing a predefined conceptual framework, and having to adapt to the unexpected and at times inexplicable in the field. The original interest in this research was in the clash of knowledge concerning the environment between policy makers and locals. The specific area of interest was in the fishery and fishing practice. This was dictated by the remit of the ODA project that lead to this research. One of my concerns was that in keeping with the intentions of the ODA project my research should have some potential, if indirect, contribution to the policy process.

The need to develop a focus point for the research led me to concentrating initially on the fishery. In the early stages I was expecting that the contrast between indigenous fishing practice as exemplified in the refuge pond traps (*bor lor plaa*) and state promoted aquaculture would somehow provide an adequate case-study. While this

has remained the basic structure of the thesis, it has also generated a more holistic framework of analysis. It soon became apparent that there is a risk of tunnel vision from beginning a research project with too firmly established notions of the research agenda. The primary means of exploring environmental issues was through the fishery. The perceived rapid decline of the fishery was an issue about which everyone had an opinion. It was also a means of discussing other issues. For in the eyes of locals, the story of the fishery is not just about fish.

Finally, it is necessary to dwell on some of the ethical considerations of this type of research. Trust is a vital ingredient of anthropological fieldwork. Many times I was confided in, or privy to some piece of privileged information. Where I have judged disclosure of this information to be a breach of trust, it has been withheld. In the interests of maintaining the anonymity of some informants, the names of villages and villagers, as well as some government officials have been changed. Issues directly relating to Special Projects in the Pak Phanang area have not been raised.

If issues concerning the generation of knowledge are to be taken to their logical conclusion in accordance with the recommendations of reflexivity, one must also considered the production of the PhD thesis. If, as authors such as Drinkwater (1992) and Hastrup (1995) argue, the researcher is also to be taken as an actor in the fieldwork experience, then the 'knowledge' that is produced and the purposes for which that knowledge is produced must also be brought into the analysis. Recent debates in development studies have considered the relationship between research and practice. However, the institutional structures that support academic research in development studies, particularly at the level of PhD, are such that issues of practice are of minimal significance. The time frame and the levels of funding clearly constitute restraints to the research. This is perhaps necessarily so, but one must at least dwell on the extent to which these restraints might influence the analysis. There is also a more troubling ethical issue that was often raised by people in the Phru, concerning the value and ultimate ownership of this research.

CHAPTER FOUR

CONFLICT AND NEGOTIATION IN THE INTERPRETATION OF DEVELOPMENT AND THE ENVIRONMENT IN THAILAND

4.i Introduction

Recent dramatic rates of economic growth, and associated problems of environmental degradation and social change pose significant challenges for a country whose population and economy is largely rural-based. These issues have become particularly relevant with the economic problems of 1997. The purpose of this chapter is to examine the ways in which interpretations of development have been contested in Thailand, and how conflicting interpretations of the meaning of development are becoming more intensified, and more politicised. These issues are particularly relevant for the Phru Khuan Khreng as a number of stakeholders, potential resource uses and interpretations of development are brought together. Underpinning this debate of development are conflicting interpretations of the desired relationship between the people of Thailand and their physical environment. Indeed, environmental concerns have been at the forefront of recent conflicts over development. Much of this debate is in terms of rights and responsibilities for the provision, distribution of and access to development and natural resources. It is also a debate that makes strong reference to cultural values of the type of society that development should seek to create, and the type of environment in which that society should live. Ultimately it is a debate concerning whose values and knowledges should count in the development process.

Policy regarding the management of natural resources in Thailand needs to be assessed in the context of the political history of the phenommenon of development. A constant theme that runs through the literature on Thailand is of the conflict between the state and rural society (eg. Pasuk & Baker 1995, Vandergeest 1991, Kemp 1991, Hirsch 1990, Turton 1987). On one hand, the history of the Thai state is presented in terms of the expansion of its political influence and claim to national resources (Hirsch 1989a). On the other, the history of rural society is one of

expansion into peripheral areas, of clearing and claiming land (Hirsch 1990). Such rural communities are described by Hirsch (1990) as 'frontier communities'. Many authors claim that there has always been a tension between state and rural society over power and production (eg. Turton 1987). It is within the period of contemporary development that the frontiers of the state and rural society have most clearly clashed. This conflict is all the more intense with widespread environmental degradation, the closing of the land frontier, and intensified competition over increasingly scarce and vulnerable natural resources (Rigg 1995). Even previously marginal resources such as wetland forests and freshwater fisheries are being more fiercely contested.

In terms of McCay's notion of 'adaptive strategies', this chapter takes an aggregate human population, and the 'community' of the nation. It is an interpretation of macro processes in order to form a contextual background for the main discussion of the Phru Khuan Khreng. It will be argued that the research material concerning the management of the natural resources of a `marginal' wetland area of Southern Thailand exemplifies many of the central issues concerning development and its interpretation.

This chapter will comprise three sections. The first will discuss the conflict between the state and rural society over the interpretation and distribution of development. Out of this conflict has arisen a new environmental agenda that poses significant challenges to fundamental principles of Thai cultural and political life. The rise of environmentalism in Thailand will be discussed in a separate section. These strands will be drawn together in a discussion of developmental and environmental concerns over fisheries, forests and wetlands.

4.ii Development: State and Society

There are two aspects to the way in which interpretations of development are contested. On one hand are differing understandings of who is responsible for providing development. There is a conflict as to whether development is something

the state should do for the people, or whether it is something the people should do for themselves (Chattip 1991). Vandergeest (1991) notes that in Thailand there is a conflict between interpretations of development as a 'gift' from a benevolent patron to an obliging client, and between the interpretation of development as a political 'right' to be demanded by the public from an accountable state. The case of the Phru Khuan Khreng illustrates many of these tensions regarding responsibilities and rights.

There are also differing interpretations of what constitutes `development' in practice; whether the emphasis should be on economic, moral, institutional, technological, cultural dimensions, and how and for what ends these concepts should themselves be interpreted. These terms are highly ambiguous. For example, a rhetorical commitment to a concept such as `social development' in itself means very little, and can be implemented by a repressive state, as well as by a `grassroots' organisation. As Thailand achieves high rates of economic growth, but with the erosion of its natural resource base and intensified competition over remaining resources (Arbhabhirama et al 1988, Rigg 1985), conflict over interpretations of development objectives intensifies further. The costs and benefits of development thus far have not fallen evenly (Parnwell 1996). The long-term environmental, economic and social sustainability of contemporary patterns of development is uncertain, and has become an increasingly important issue in national and local politics. The ambiguities of these interpretations are again prominant in the case of the Phru Khuan Khreng.

The literature on Thailand emphasises two main narratives and approaches to development. Historically the state has been the principal agent of development and most attention to development in Thailand deals with the state's interventions. Since the 1970s, what Lohmann (1993) refers to as a `counter-narrative' has emerged from NGOs and rural people that both challenges the state's political legitimacy and responsibility for development, and offers alternative values and strategies. It is a narrative that challenges values of modernity, seeking a solution in what are termed `traditional' rural values, knowledge and practice (Hewison 1993, Yos 1992, Chattip 1991, Gohlert 1990, Seri 1986).

A 'counter-narrative' to development and relations of power has always existed in some form in rural Thailand. Although there have been periods of widespread organised opposition to state development, much of this has been categorised as 'everyday' forms of resistance (Vandergeest 1993b). As the concept of development (*patthana*) becomes increasingly established in public discourse (Demaine 1986, Hirsch 1990) so too does this counter-narrative become more assertive. Yet rural people are not ideologically bound to one narrative rather than another. Rural people, the intended benficiaries of development, are also quite capable of manipulating interventions from the state and NGOs alike in order to advance their own interests (Lohmann 1995). Evidence from the Phru Khuan Khreng would suggest that they are actively defining development strategies and values for themselves. The capacity of rural people to capture development for their own interests is also a phenomenon of which the state is well aware.

As a caveat it should be said that these two narratives do not represent distinct discursive categories, but rather two poles of a continuum of conceptualisations of development. Elements of each can at times be seen in the other, particularly as such concepts as `community development' and `participation' become more centrally incorporated into both narratives; but clearly with very different interpretations and implications. The discourse of state and NGO development has at times shared the same concepts (eg. an emphasis on the importance of social and moral development), but these concepts have been applied with very different ends in mind. Conflict over interpretation of these concepts does not cease once they become established in development discourse.

4.iia The Development Narrative of the Thai State

Historically the Thai state has been the dominant agent of development. The state's role has been based on its claimed capacity and right to interpret the needs of the people, and to interpret these needs within a framework that emphasised modernisation and progress (Demaine 1986). The provision of development has been both a means of legitimising the Thai nation-state since the 1932 constitutional

revolution, and of extending the influence of the state. It is via the provision of development that the state most actively enters the lives of the rural population. For Chai-Anan Samudavanija (1990) the state is three-dimensional. Its legitimacy and strength is dependent on its provision of three distinct variables; security, development and participation. These variables are accorded different priorities that reflect changing state/society relations.

The style of development is also determined by internal struggles within the state. For many years the Thai state was regarded as being dominated by the bureaucracy, and was referred to as a 'bureaucratic polity' (Riggs 1966). However, other interests also influence the state. For Chai-Anan (1990), the Thai state is not a homogeneous static entity but comprises shifting alliances of the military, the bureaucracy and business groups. Each of these groups plays a prominent role in development, and in manipulating development for their own political and economic interests. In pursuing national development their interests do not always converge. Self-preservation (ie. security in Chai-Anan's terms) is often the overriding concern. This objective is well served in Thailand particularly as state factions are active in party politics through the appearance of providing development to the predominantly rural electorate.

A consistent feature of state development has been the issue of security and the consequent emphasis on centralisation and legitimation of the Thai state (Hirsch 1990, 1989a, Vandergeest 1991, Turton 1987, Demaine 1986). In this process it was the military and the bureaucracy that played the dominant roles (Hirsch 1989a, Kemp 1991). Development was very much a part of the process of building the 'imagined community' (cf. Anderson 1991) of the Thai nation and thereby strengthening the central authority of the state, and particular elements within that state. For Demaine (1986) this was a process that began with the constitutional reforms of King Chulalongkorn in 1892, but which gained even greater importance with the threats of insurgency in the late 1960s and 1970s. It is a style of development that has widely been characterised as centralised, paternalistic, 'top-down' and unaccountable (Riggs 1966, Friedman 1983, Gohlert 1990, Hirsch 1990, Rigg 1991, Hewison 1993). It is also an aspect of development that has been prominant in unruly areas of the country.

As with post World War II development in other parts of the world, the emphasis in Thailand was on modernisation and progress, based on adoption of macro-planning and the application of scientific expertise and values (Demaine 1986). This trend has manifested itself in many forms. In the Songkhla Lake Basin it can be witnessed in proposals for large-scale infrastructural development such as the Songkhla Lake barrage and the RID Phru Khuan Khreng irrigation project, and in the establishment of such planning organisations as the Songkhla Lake Basin Planning Committee. At the micro level, the emphasis on the application of scientific expertise can be seen in the widespread promotion of aquaculture as a response to declining freshwater fisheries.

According to the logic of modernisation, the major obstacles to development were regarded as being the remoteness and the backwardness of the largely rural population (Hirsch 1989,1990, Vandergeest 1993). As will become clearer in later chapters, this outlook continues to be influential in state policy towards the Phru Khuan Khreng. Development required the adoption of technological solutions, the transformation of backward peoples' knowledge and practice, and the penetration and co-optation of village level institutions. Emphasis was placed on the construction of roads, of irrigation works, and the transformation of the agricultural landscape through the expansion of the area of land under cultivation, the adoption of scientific agricultural technology, and in a population shift to the growing urban sector. The putative superior knowledge and technology of the state developers and experts not only legitimised their right to act as developers, but also denied the right and capacity of rural people to develop themselves (cf. Hobart 1993).

Within the last decade there has also been a rhetorical recognition of the need to balance economic development with social and moral development that can be traced as far back as the 1950s (Demaine 1986). These terms are highly ambiguous. As was noted earlier, the emphasis on the moral condition of rural people can operate as a mechanism of ideological control and a means of rationalising development failures without addressing structural issues. For example, since the 1980s there has been a rhetorical recognition of the importance of participation for the success of development interventions. Yet as Hirsch (1989a p.51) notes, participation is

employed in state development discourse to mean `to come in and take part' (*kaan khao maa mii suan ruam*). The use of the term `participation' connotes....

> "....a willingness of villagers to conform with projects initiated by government development agencies and, as in the case of the tambon council, this means an adaptation to bureaucratic procedure. It is devoid of the principles of initiative, variety, or spontaneity that alternative interpretations of participation stress." (Hirsch 1989a p.51).

Populist concepts have been employed by the state for specific ends and within a very particular ideological framework. The main motivation for emphasising non-economic factors of development is the recognition of the disruptive impact of rapid socio-economic change and the consequent need for social order. Recognition of the social consequences of development came with the growing rural unrest in Thailand and tension in the rest of Indochina. Rural campaigns against debt, landlessness and poverty intensified in the 1960s and 1970s and contributed to the brief overthrow of the military between 1973 and 1976 (Turton 1987, Grace 1981). For the state, providing the trappings of economic development was a means of appeasing a potentially restless rural population. But it was a strategy of appeasement that was designed to ensure the legitimisation and authority of the state and the pacification of rural areas. Thus villages were mapped and fenced and integrated into a hierarchy of administration that ensured order and compliance, but which at the same time presented an image of village-level democracy and autonomy (Hirsch 1989). Village councils (*tambon*) were dominated by rural elites, and incorporated into a hierarchical chain of patron/client relations. Local level groups (sometimes paramilitary, anti-communist groups) were set up in order to foster a sense of loyalty to the nation and the institutions of the state (Hirsch 1989, Rigg 1991, Vandergeest 1991) and which allowed rural elites and agents of the state to monitor remote areas. Since state development was channelled through these agents, their economic and political influence grew. Their authority also allowed them great influence in determining where and how development should be targeted at the local level (see also Masae 1996).

The rapid economic growth of the 1980s has failed to solve many of the social and environmental problems of Thailand, and in fact is widely argued to be a prime cause of the most recent manifestations of these problems (Santasombat 1992). Recently state development plans have re-emphasised the need for social development and redistribution of the benefits of development so that a larger proportion of the population may share these developments. The National Economic and Social Development Board (NESDB) 5th, 6th, 7th and 8th Five Year Development Plans have emphasised the need for participation, decentralisation and sustainable management of natural resources (NESDB 1987, 1997). Yet in the name of participatory development the administrative hierarchy has become even less participatory. For example, Hewison (1993) argues that the number of administrative steps that development plans from the *tambon* council have to go through has actually increased. As a result, he argues that power has been transferred further from the village. Conflict within the state apparatus has also hindered participatory development. The NESDB visions of development have not always been shared by other ministries, and their plans have generally been ignored. This culminated in the NESDB losing its seat on the cabinet in 1993 so that the honourable intentions of the Five Year Plans have even less influence. The need for legal registration in order to ensure freedom of operation and access to funds operates as a mechanism for the state to take over grass roots initiatives (Garforth 1990). NGOs involvement in the development process is similarly restricted by legislation prohibiting political activity (eg. Enhancement and Conservation of National Environmental Quality Act B.E.2535).

The dominant impression that emerges of development in rural Thailand is of a hierarchy of organisations, at each level dominated by elite patrons, dependent on their position of influence as a result of their clientist relations with superior patrons, and with the support of their own clients. This is an image that permeates the development bureaucracy and which Rigg (1991) argues stifles low-level initiative. There is a further tendency for government departments to be run as 'empires' (Rigg 1991) of dominant patrons competing with other government ministries and departments for funds and influence. Consequently coordination between government ministries and departments remains poor, and departments often find themselves

replicating or competing against each others' work (Tongsawate and Tips 1988). Issues of co-ordination and conflicts of interest betwee government departments, and between national and local government dominate the management of an area such as the Phru Khuan Khreng. Lying under the jurisdiciton of three provinces and targeted by the Departments of Fisheries, Forestry and Irrigation management of the Phru presents serious institutional challenges.

According to Chai-Anan Samudavanija's (1991) analysis of the three-dimensional state, Thailand can be regarded as having gone through a progression from security, to development to participation. Yet it could also be argued that adoption of participatory rhetoric and form is in fact a more efficient means of ensuring state security and legitimacy. Even in the current era of participatory rhetoric, issues of the state's political security are never far away. As the communist threat has receded other targets have been presented. In the South these include Muslim separatism, but also the new generation of NGOs that emphasise grassroots development that bypass state-sponsored village institutions, and which advocate a strong, rural civil society. Proposals for environmntal management that include recognition of local knowledge and meaningful participation in the management of a range of non-environmental resources have political ramifications that clearly go against current state thinking. As Chai-Anan prophetically notes, the progression to participation can never be guaranteed as being complete and irreversible.

4.iib The Counter-Narrative

What Lohmann (1995) refers to as the `counter-narrative' in Thai development not only challenges the right of the Thai state to be the sole agent and arbiter of development, but also challenges the interpretation of what that development means in practice. This 'counter-narrative' should not be seen as a cohesive ideology but as a trend of thinking. The counter-narrative extols the virtues of community culture (*watthanatham chumchon*) and stresses that the solutions to development are to be found in the `traditional' knowledge and practice of rural communities, and advocates a form of delinking from the pressures of the national and international market

economies (Seri 1987, Gohlert 1990, YOs 1992, Hewison 1993). It further advocates that these traditional communities and their traditional institutions should be the agents of development, claiming their rights to assistance from the state as defined by the communities themselves. It is an approach to development that has its appeal in the fight to preserve traditional livelihoods based on the utilisation of natural resources according to the needs of local communities. These communities are argued to have managed natural resources in an equitable and sustainable manner until the penetration of the state and the market. Local communities' successful management of natural resources is argued to be based on a distinct cultural and moral valuation of the environment that is essentially holistic, and which regards nature and culture to be interconnected. Indigenous knowledge of medicine, agriculture and natural resource management is held up as the solution to the adverse consequences of capitalist, western science-based development (Gohlert 1990, Seri 1987, Yos 1992).

The counter-narrative has arisen in response to state-led development and the costs that have been associated with rapid economic growth. An influential writer in this counter-narrative, Yos Santasombat (1992) criticises the state-led development strategy arguing that....

> "...the growth-oriented industrial development has been made possible through the rapid destruction of two of the most traditional assets: a supportive local community and a healthy natural environment." (Yos 1992 p.79)

Such is the extent of environmental degradation in Thailand that there is now serious doubt as to whether the natural resource base and recent levels of economic growth are sustainable (see Anat et al 1987). Environmental issues have begun to dominate the discourse of development, particularly for poor rural people. As Hirsch and Lohmann (1989) argue;

> "For these groups and others claiming to represent them, environmental politics are often surrogate for deeper rooted political

> struggles relating to distribution of resources and the direction of development."
>
> (Hirsch and Lohmann 1989 p.441)

Both rural communities and the natural environment are widely held to be symbols of Thainess and the Thai nation. The environment and rural culture are argued to be interlinked, and to represent the essence of Thai culture and therefore of Thai cultural heritage. What this conflict over natural resource management and development reflects is a fundamental difference in how nature and the relationship between society and nature is conceptualised. These conceptualisations say as much about society and culture as they do about nature.

The costs of state-led development can be elaborated further. The main theme of the counter-narrative argues that the erosion of traditional cultural practice and values, and the erosion of natural resource livelihoods is the result of the exploitative nature of state development (Nartsupha 1991). Development in name has been underdevelopment in practice. Increased state and market penetration is argued to have led to increased poverty and market dependency and a growing gap between rich and poor in rural areas, and between rural and urban areas. Competition between urban and rural centres over the use of increasingly scarce natural resources has intensified. In recent years many areas have suffered droughts, and despite irrigation investment farmers have found themselves unable to plant the second crop of rice that previous development promised, and upon which they are now dependent. As in the Phru Khuan Khreng, increasing numbers of rural people are compelled towards seasonal urban migration as the land can no longer support them (see Parnwell 1996). The closing of the land frontier which historically allowed rural people almost unlimited access to fresh natural resources, together with the commoditisation of land has led to rural people being moved from traditional lands, depriving them of their livelihood base (Hirsch 1989a, 1990, 1990b).

These trends are further associated with a breakdown of traditional rural moral and cultural values, and the breakdown of traditional rural institutions. For many rural people state development efforts have been at best irrelevant, at worst highly

destructive. Left to their own devices rural people have in effect been responsible for their own development. However, even in rural areas the benefits of development have been unevenly distributed (Parnwell 1996). In the South of Thailand, some sections of the rural population have undoubtedly benefited economically from development. The growth of tourism, rubber and shrimp farming has had direct benefits. However, this has also further accentuated problems of economic stratification and raised issues over long-term sustainability.

Challenging the appropriateness of state-led development and asserting the potential of traditional values is a political challenge to the state's legitimacy to act as the agent of development. It argues that decisions about development should be localised and placed in the hands of village institutions. This is a fundamental political conflict between the state and an emerging civil society. State/centralised development takes decision-making responsibility and management of natural resources away from local communities and places them in the hands of remote centralised state authorities. Such an approach relies on the belief in a universalistic understanding of the environment that can be generally applied, rather than a locally-specific knowledge of the environment. Unlike traditional community management, centralised management of natural resources is a strategy that is largely untested (see Lohmann 1993).

A crucial distinction between the counter narrative and the narrative of state development is that each is based on a different type of knowledge; generally termed indigenous and scientific. Scientific knowledge is argued to be literate, atomistic and impersonal, whereas indigenous knowledge is argued to be oral, holistic and personal (Lohmann 1995). Rural people are further argued to operate within a conceptual system that apportions natural phenomena with different cultural meaning and moral value from the models of modern science. The natural environment is the basis for rural livelihoods. The relationship between society and nature is believed to be one of balance that ensures sustainability, a notion that it is argued to be rooted in Buddhism. The introduction of market pressures and modern technology disturbs the conceptualisation of balance by increasing the human capacity to exploit the environment, and alters the cultural valuation of natural resources. But the costs of

such exploitation are so high that the relationship is unsustainable, leading to the collapse of the social and environmental order.

The counter-narrative is not without its critics, even among those that may sympathise with many of its aspirations. In seeking solutions to the present by recourse to an imagined past there is a danger of constructing the past `as that which the present is not' (Vandergeest 1991 p.423). In so doing we run the risk of imposing selective interpretations of the past which have no empirical foundation; of romanticising the moral economy of the peasant without appreciation of the inequitable and exploitative characteristics of pre-capitalist rural society. In advocating traditional solutions to agricultural development there is a further danger of attributing to indigenous knowledge a level of understanding based upon a scientific interpretation of indigenous practice (Richards 1993).

It is clear however, that rural people themselves do not think solely in the terms of these two narratives. Rather they are engaged in assessing the relative merits of each as applied to the practicalities of rural livelihood strategies. Much of the debate on indigenous knowledge has emphasised the relationship between indigenous knowledge and indigenous cultural identity and political influence. Yet it fails in its academic credibility because of its weak empirical base. It also fails to appeal to rural people by romanticising a sense of tradition and past, which it is actively engaged in redefining in the present, and which many rural people know never existed. Yet as Rigg (1993) argues, it is a narrative that has seized the moral highground.

The choice for rural people is not simply tradition (whatever that may mean) or modernisation. Many people want both: to maintain cultural values and worldviews, but to gain the manifold advantages of modernity (of agricultural technology, education, health, transport etc). By managing to incorporate the advantages of modernity into existing indigenous cultural frameworks (eg. by adopting agricultural technology) rural people may be better able to maintain indigenous cultural and economic identity than by adopting `traditional' technology that can not successfully be applied in the contemporary socio-economic context (cf. Bebbington 1994). Recent evidence suggests that rural people are not so interested in recreating a

mythical tradition in the present, but in gaining greater control of productive capabilities (Rigg 1989). The adoption of traditional knowledge and practice or scientific knowledge and practice is determined by other more practical factors.

While most of the literature on rural development in Thailand discusses issues of political and moral legitimacy of development interventions by the Thai state, there is less written on the legitimacy of NGO interventions. Partly because of the NGO ethos and rhetorical commitment to such concepts as grassroots development, it is often assumed that NGOs are indeed closer to the people and that almost by definition NGOs are `Peoples Organisations'. The recent debate concerning the 'community culture' (*watthana chumchon*) school of development has highlighted the NGO reinvention of the Thai rural community, and the reinvention of essentially Thai values; values which the NGOs believe to be the foundation for equitable, ethical and sustainable development. In many ways, NGOs are involved in a similar process of nation building as that of the post-1932 state. They too are defining essentially Thai values, often based on elite interpretations of rural Thailand. It is a highly selective process of interpretation. The legitimacy of NGOs to act as developers is assumed, yet it is not clear how rural people assess external interventions and how these interventions are perceived to be legitimate. These issues are equally relevant to state and NGO interventions alike.

Folk perceptions of knowledge and exploitation are central to understanding rural people's mistrust of state interventions, and their explanations of failures of state development. In assessing state interventions rural people are assessing the political legitimacy of state bureaucrats and the legitimacy of the modern knowledge upon which these interventions are based (Vandergeest 1991). Government officials have frequently complained of the reluctance and inability of rural people to organise themselves and participate in state development initiatives. This has often been attributed to a cultural and moral flaw in rural people. There appears to have been very little appreciation of how external development interventions are perceived by rural people, or of the level of mistrust that rural people have of government officials. Many development interventions, as Vandergeest notes (1993a) have been perceived

by rural people as a contemporary form of corvee labour that offers them few or no benefits.

The legitimacy of government officials is partly based on their position in the social hierarchy, but also on their assumed knowledge. It is this knowledge which imbues government officials with power. In the development administration this knowledge is closely associated with formal education and western science; a system of knowledge that is largely inaccessible to rural people. Formal education is often revered as a means of self-improvement. But it is also widely treated with suspicion. The efficacy of this system of knowledge is frequently doubted particularly when development interventions go against the grain of local (non-formal, folk) knowledge, and fail (Calavan 1989).

In rural people's negotiation of the applicability of different knowledges some facets of western science and development are seen to work and are more readily incorporated into rural society. However, other facets of state development clearly do not work and are dismissed as unnatural, inappropriate to local conditions or as being less effective than existing indigenous strategies (cf. Tongdeelert and Lohmann 1991). The emphasis that state development placed on the efficacy of western science in rural development that displaced and delegitimised indigenous knowledge and practice, was also a means of assuring their own legitimacy. The costs and failures of many state development interventions challenge the legitimacy of the developers and the knowledge and values upon which that development is based (cf. Robertson 1985). It further enhances the legitimacy of rural people's own development initiatives.

4.iii Society and the Environment in Thailand

As the discussion above has revealed, underpinning the story of development in Thailand is a history of a changing, as yet unresolved relationship between Thai society and the environment. The costs associated with development have been discussed briefly. In the counter narrative of development, a strong connnection is made between the cultural integrity of rural communities and the environment, and

between environmental and (rural) cultural sustainability. As Rigg (1995b) states, rural communities hold powerful resonance for the national community as well as for rural society. Erosion of the natural resource base clearly has implications for rural society, but also for the nation. Thus for the State too, environmental costs and doubts about the sustainability of the natural resource base are increasingly being recognised and incorporated into national development plans. This section will discuss the relationship between Thai society and the environment by drawing on two complementary threads; firstly of the expansion of the Thai state and emergence of the Thai nation, and secondly, the expansion of rural communities into peripheral areas. This tension betweeen the centre and periphery is argued to characterise Thai development (Hirsch 1990). Both the state and rural communities have expanded their frontiers to the extent that they both now meet, often in conflict.

4.iiia The Thai State and the Environment

The history of the expansion of the Thai state and of development has already been outlined. Development as promoted by the State, fell largely in the paradigm of modernisation (Demaine 1986). The environment was perceived as a limitless resource to be dominated and controlled through the application of science and technology. Modern agricultural technologies were promoted and the historical process of clearing land for agricultural production for export was continued. Indeed, many authors have argued that the increase in agricultural production, particularly of rice was attributable to the increased area of land under production rather than to increased efficiency (Hirsch 1990, Douglass 1984, Chiengkal 1983). At the same time, state-led development was a process of extending the political authority into marginal areas, and defining the geographical borders of the nation (Thongchai 1994, Vandergeest 1996).

Environmental concerns have played a significant role in wider national political conflicts. Controversy over the proposed Nam Choan dam in the 1970s was a key issue in the series of protests that eventually led to the overthrow of the military government (Hirsch and Lohmann 1989). These environmental concerns have continued throughout the 1980s and 1990s. Devestating floods in the South exposed the practice of illegal logging and state complicity, resulting in the 1989 logging ban

(Rigg 1995). However, in acknowledging the importance of environmental issues the state has sought to depoliticise the debate. The international discourse of conservation has been readily adopted by the Thai state. For the state, the environment primarily is interpreted to mean wildlife rather than *chaow baan* (villagers).

The competition over control of natural resources between the state and rural people is particularly significant for forest resources such as the Phru Khuan Khreng. As Hirsch argues, 'settlement of forest land has been the principal dynamic of Thai agricultural expansion for more than a century' (1990 p.32). As the influence of the state spread, vast areas of natural resources, particularly forests, increasingly came under the jurisdiction of the state. Control over resources that increasingly had a value for the state was an important ingredient of export-oriented development. This also had an important political dimension. The history of rural Thailand was closely tied to the forests; as areas to be claimed and cleared for agricultural production, or as places of retreat from the political and economic influence of the state and rural elites. Thus, state control over the forests, and other marginal areas, brought economnic and political control.

The literature on forest settlement in Thailand is almost exclusively concerned with the Central, Northern and North-Eastern areas. As will become apparent in the discussion on the fieldwork, much of the following history of forest settlement is relevant to the case of the Phru Khuan Khreng. This history of rural settlement of forests has led Hirsch (1990) to describe these communities as 'frontier communities'. In this way, Hirsch alludes to both a political and an environmental frontier. Explanations for this type of settlement of forests are many and varied. Avoiding political oppression, or economic deprivation, particularly debt and loss of lands, has been a constant theme in the history of frontier communities. However, at different times forest settlement has been encouraged by the state or by capitalist interests. For the state, building roads into marginal and troublesome frontiers, and then settling these areas was a means of pacifying these areas, and of integrating them into the nation state and economy. At other times, through loans and other incentives

capitalist interests have encouraged settlement, and the production of cash crops in newly cleared areas.

4.iiib Cultural Representations of *Muang* and *Paa*

Cultural imaginings of nature and society form an important constituent of processes of development, and of environmental management (cf. Croll and Parkin 1992). The history of forest settlement and dominion over natural resources has been discussed above. This section will now address the ways in which environmental phenomena are conceptualised and thus have more far-reaching cultural and political resonances. There are always dangers in talking of cultural understandings of the environment of implying homogeneity within defined cultures, and of failing to appreciate processes of reinterpretation. Contemporary concerns over development and the environment are generating a further reassessment of these cultural representations. Much of the writing on culture and the environment in Thailand attempts to present 'the Thai understanding of the environment' (see Siam Society 1989). By doing so the highly political dimension to defining culture and the implications of doing so for notions of nation and development are overlooked. Culture is not static, and it is not homogeneous. What are often classified as cultural understandings of a particular nation are no more than elite, literate interpretations. Alternatively, 'folk' interpretations are presented, but without an appreciation of the dynamics of rural society and with false conceptualisations of what constitutes rural society in the first place. In the discussion that follows, it should be recognised that cultural understandings of the environment in Thailand are varied and dynamic. As Hirsch astutely reminds us,

> 'Thai conceptions of the forest are varied, influenced as they are by elements of animism, Buddhism in its various forms, and Western ideas alternatively of 'progress' and 'conservation' " (1990 p.47).

Indeed, underpinning the debates of development, environment and culture in Thailand are important political struggles over the definition of what is an essentially Thai understanding of these phenomena.

Perceptions of the Phru Khuan Khreng as a wild and inhospitable place have some basis in cultural distinctions between city and forest. A commonly cited notion is of the differentiation that is made between the city (*muang*), the forest (*paa*) and the wild forest or wilderness (*paa thu'an*) (see Stott 1991, Hirsch 1990, Rigg 1995, Forsyth 1995, Pasuk & Baker 1995). While these separate categories do clearly exist, they are often confused, and in some instances may actually overlap. Each of these spatial categories has important cultural significance and resonances. *Muang* is associated with the spatial and spiritual centre of the kingdom, and consequently with ideas of civilisation. Conceptualisations of *paa* and *paa thu'an* are more problematic, and in the era of environmentalism more contested. Both *paa* and *paa thu,an* have connotations of the wild, untamed and dangerous (Stott 1991, Rigg 1995). At times *paa* and *paa thu'an* hold the same cultural significance. However, *paa thu'an* is more closely associated with wilderness in the sense of an untamed environment, while *paa* is associated with a more managed environment. However, the difference is one of degree. The forest (*paa*) may be the source of wild animals for hunting, for medicinal plants (*samun prai*), or for food. The *paa*, however, may also be a place of retreat for forest monks (*arnyawasi*) and as such, a place of important ascetic practice and spiritual significance (Stott 1991, Forsyth 1995). In contrast the *paa thu'an* is more closely associated with the space belonging to potentially malevolent spirits, to illegal activity and to banditry. For example, in the Phru moonshine liquor is referred to as '*laow thu'an*', literally 'wild forest whisky'. This is a term that is applied to other illegal or wild activities.

For Stott (1991) the history of the expansion of the Thai state is also one of expansion of the concept of *muang* into *paa* and more particularly into the uncivilised space of *paa thu'an*. This is manifested in the centre's settling of the periphery and the 'transformation of the wild forest into a habitable domain' (Hirsch 1990). It is also manifested in the contemporary environmental movement's claims over the untouched wilderness of the *paa thu'an* in the cause of conservation (Stott 1991, Forsyth 1995).

In this way, the environmentalist elite of the *muang* claim jurisdiction over the *paa* so that it becomes a 'part of the modern civilized state' (Stott 1991 p.150).

This raises an important issue as to what is meant and understood by the concept of Nature in the Thai environmental context. There is very little of the physical environment in Thailand that has not been fashioned in some way by the actions of people. For Rigg (1995) a Nature untouched by humans is probably 'a fantasy' (p.9). Even the forests have a long history of being settled, or at least of being utilised in some way. Environmental concerns are expressed by the state and environmentalists alike by recourse to the Thai terms *thammachaat* and *singwaetlom*. These terms have only recently entered common usage and are not concepts readily employed by rural people. Nor is it clear that these terms are interpreted by all groups in the same way. As was discussed in the introductory chapter, underpinning notions of environmentalism, conservation and sustainability are interpretations of Nature. Interpretations of nature have powerful connotations for the social world as much as the physical world. In the context of development and environment, competing interpretations of the basic concepts have important political implications. One cannot simply rely on dictionary definitions of these key terms. The term *thammachaat* is made up of the Thai word for Dhamma (*thamma*) and nation (*chaat*). Notions of *thammachaat* have important connotations of religion and national community. However, as employed in the environmental movement *thammachaat* implies an essential nature, uninfluenced by humans. Forsyth (1995) refers to Taylor's interpretation of *thammachaat* as 'a concept embracing all nature in its physical and poetic meanings' (Forsyth 1995 p.170). Rigg (1995) argues that *thammachaat* is used interchangeably to refer to Nature and the environment. He argues that...

> '*thammachaat* is an elegant almost poetic word, which encompasses virtually the entire human and natural milieux.' (p.9).

It is somewhat surprising that the term *singwaetlom* is not discussed by these authors. This term is most commonly used to refer to the environment and appears in the names of government agencies (eg. the Office of Environmental Policy and Planning

is known as '*samnakgaan naayobai le paen singwaetlom*') and in government and commercial advertisements to 'conserve the environment' (*anurak singwaetlom*). As the fieldwork will reveal, there is some confusion as to what is meant by the term *singwaetlom*. Often it is used interchangeably, as in English, to refer to the natural world around us, and sometimes to refer to a combined social and physical environment. When rural people, the state and environmentalists come together over issues of development and environmental protection, the terms and aims of each do not necessarily fit (cf Lohmann 1995). There is an important political dimension to how these concepts which have been so widely incorporated into state and populist discourse, are reinterpreted and applied for particular ends.

Criticisms of the contemporary environmental 'movement' in Thailand echo many of the criticisms of the counter narrative. Much of the cultural representations that dominate the environmental movement are of the 'seductive mirage' (Kemp 1987) of village life and of a lost golden era of human environmental harmony that perhaps never existed. Much of the concern for the environment is over wildlife and habitats, rather than over an environment that economically support a rural population. Environmentalism as articulated in Thailand is very much a product of an educated urban elite influenced by international environmental concerns (Stott 1991). These urban, elite interpretations of environmental degradation are argued to represent an expansion of the urban into the forest (Stott 1991). As with the counter-narrative's attitude towards morality, environmental proscriptions are couched in a Buddhist discourse that again emanates from urban elites.

4.iiic Competition over Natural Resources

The role of the state in claiming authority and jurisdiction over natural resources is closely tied to the political history of the Royal Department of Forestry (RDF). At the same time that forested areas such as the Phru Khuan Khreng were being settled by discplaced rural people, they were also being claimed by the RDF. The RDF has played a pivotal role in claiming, defining and mapping large tracts of forests as national resources (Vandergeest 1996). Often this has been in conflict with rural people who hold ambiguous legal entitlement to land. At other times it has been in

conflict with other government agencies also claiming territory, and jurisdiction for their own operations. The establishment of the Thale Noi Non-hunting Area has given the RDF jurisdiction over the Phru Khuan Khreng.

The issue of property rights is a crucial theme in the competition over natural resources, but one that is often overlooked in favour of what are considered more clearly 'environmental' concerns. However, for many commentators and rural people, the issue of secure land rights for rural people is at the heart of issues of sustainable management (cf. Hirsch 1990, Feder 1987). Prior to 1890 all land technically was the property of the King and there were no formal land rights (Christensen & Akin Rabihadhana 1994). The establishment of the RDF under King Chulalongkorn in 1896 marked the beginning of the era in which state claims to natural resources were to be more rigorously enforced. State claims to jurisdiction over natural resources went hand in hand with state claims to territory. However, conservation interests were less important than the extraction of income from logging concessions (Hirsch 1990b) and the definition of the geographical integrity of the emerging nation state (Vandergeest 1996, Thongchai 1994). The combined processes of growing population, commercialization and scarcity has intensified competition over natural resources (Rigg 1995). It was not until the 1941 Forest Act that conservation interests were established, and not until 1964 that the concept of reserve forests was established in the National Forest Reserves Act (Hirsch 1990b).

The establishment of forest reserves has been, and continues to be, highly contentious. For Lohmann, 'the philosophy of the Royal Forestry Department (RFD) that the forest was essentially a cash crop under its jurisdiction' was their guiding principal, and the Reserve Forest Act merely 'led to the expansion of state holdings of forest land in accordance with international recommendations,' and 'only opened up the forests to further commercial exploitation' (1995a p.204). An increase in forest reserve areas occurred in tandem with an increase in the cultivated area within reserves, and an increase in the problem of 'encroachment' (Christensen & Akin Rabihadhana 1994). The issue of 'encroachment' has dominated forest management, and moulded attitudes of both the state and rural people towards ownership of natural resources.

The history of forest settlement cannot be understood without consideration of the ambiguity of legal title, and the processes of rural poverty in which the forests and peripheral resources provided a safety net for the indebted, landless and persecuted . The demarcation of forest reserves around land already occupied could be seen as encroachment by the state as much as by rural people. As Rigg (1993b) notes of forest reserve areas;

> "some areas were already settled and cultivated *before* the National Reserve Forest Act was passed in 1964. At that time, over 80% of land had no legal title and the designation of Reserve Forest was often highly arbitary. So, in a very real sense, there are farmers today who could legitimately claim that *their* land was encroached upon by the state and not vice versa." (1993b p.281 author's italics)

This has generated intense, often violent conflict between the RDF which has claimed areas of forest as its own, and rural people who have suddenly found themselves classified as 'encroachers' in state reserve forests. By defining large sections of the rural population as 'encroachers' of reserve forest the RDF has managed to lay the blame for environmental degradation on rural people. Framing these sets of issues (eg. of settlement, decrease in forest cover) as a problem of 'illegal acitivity' implies the need for state management. This line of argument has continued to be a mechanism whereby the RDF has attempted to legitimise its own authority to act for the public good. Essentially political issues of ownership and land rights have thus been lost in a haze of 'environmental' and 'conservation' issues. In advocating popular participation in the form of increased involvement of NGOs in environmental issues, the state has been careful to define that involvement as being 'without any objective to be involved in politics' (Enhancement and Conservation of National Environmental Quality Act BE 2535 p.7). As will be discussed in more detail, this separation of environmental and political concerns permeates state thinking. It is not however, how rural people perceive their own situation (cf. Lohmannn 1995a).

The classification of forest reserve areas has been based on state claims to territory rather than to environmental conditions on the ground. Hirsch (1990b) argues that 'a

significant portion of Thailand's land area is classed as forest reserve but has no trees' (p.168). Establishing reserves has severely restricted local resource use activities. In terms of human ecology, rural people have been assigned less importance than the physical environment. The protection of wildlife became a further mechanism for state claims to forest areas with the passing of the Wildlife Conservation and Protection Act in 1960, and the National Park Act of 1961 (Vandergeest 1996). Wildlife protection became a more prominant national issue in the 1970s for the growing environmental movement, and the RDF responded by declaring a growing area of wildlife sanctuaries and national parks (Vandergeest 1996). The Thale Noi Non-Hunting Area, in which the Phru Khuan Khreng lies, was one of the first of these areas to be established (Parr 1994).

Brockelman (1985) argues, 'Thai legislation specifies the major functions of parks as protection of plants and animals and recreation for people' (p.478). This way of regarding the environment has inspired the more recent enthusiasm for 'ecotourism' as the panacea for resolving conservation and economic concerns (eg. TAT 1996/2539). It presents a picture of the environment in which rural inhabitants having been defined as 'encroachers' and held responsible for degradation by the state, are largely excluded, except in their role as subjects for the tourists' photographs. However, rural people themselves have not passively accepted such an interpretation of the environment, or of their own role in that environment. Lohmann (1995b) argues that rural people have been active in applying the discourse of environmental conservation for their own ends, and in bringing such issues as land rights back into the environmental debate. For Vandergeest (1991) a similar trend can be witnessed in rural peoples' attempts to redefine development as the state's responsibility to its citizens.

4.iiid Ownership of Natural Resources: Co-Management, Land Tenure and Knowledge

Questions concerning ownership of natural resources inevitably raise issues of land rights. In Thailand these are issues that are highly contentious and confused. The

legal code is often unclear and poorly understood by government officials and rural people. What is laid out in the legislature often has little bearing on local practice. As has been said, alliances of powerful vested interests between state officials, village leaders and business are often capable of manipulating or bypassing the law to their own ends. Scandals concerning corruption in the allocation of land rights are commonplace. Indeed, during the period in which the fieldwork for this thesis was carried out, the government of Chuan Leekpai was largely brought down over the corrupt allocation of land rights in what was supposed to have been a reform package aimed at the landless.

The contemporary system of land title was first established in 1954 with the Land Act. This is an Act that has been described as being 'notoriously ambiguous and conflict ridden' (Lohmann 1995a p.218). It details several categories of land title. As Lohmann writes:

> "These include full land title (NS4), a transferrable certificate of use (NS3), a pre-emptive certificate authorizing temporary occupation (NS2), and a claim certificate unusable as collateral (SK1)." (1995a p.218)

In addition to these categories is that of NS3K (*nor sor sam kor*). In practice, anything above NS3 (ie. NS3, NS3K and NS4) is considered to be full title and can be sold or used as collateral for loans from banks (Hirsch 1990). However, in addition many farmers without any of the above forms of legal title pay land tax and receive certifificates for doing so. These are known as PBT5 (*por bor tor haa*) and PBT6 (*por bor tor hok*). It is commonly believed by villagers that these tax certificates are a low-level form of title, even though this is not the case according to the legal code (Hirsch 1990b). There is obviously a great deal of variation of practice according to local conditions. In many areas, including the Phru Khuan Khreng, a very low percentage of people have any of the above forms of title. This is a common phenomena in many parts of Thailand. Indeed Lohmann (1995) refers to Amara's (1985) study of the Weeping Praire region of Isaan in which only 2.5% of the land

area is covered by NS2 or NS3K certificates. The particulars of the situation in the Phru Khuan Khreng will be discussed in later chapters.

The inconsistency and ambiguity of land title has often undermined RDF attempts to demarcate reserve forests. As has been said above, reserves have ofttten been established in areas in which local people hold some form of title. In other instances, forest reserves have been established and the land then sold on to commercial interests. In many instances, local people continue to hold some form of title in reserve forests, and to pay taxes on that land. As Feder et al note:

> "Although the sale and purchase of state-owned land is illegal, survey data revealed that reserve land was being traded as frequently as legally held private land." (Feder et al. 1988 p.485)

The issue of who has ultimate authority over land and natural resources is one that has dominated recent debates concerning co-management between the state and rural communities of natural resources.

Within recent years concepts of 'participation' and 'co-management' have been adopted by various government departments in their efforts to foster development and in the management of natural resources. This recent trend has been influenced by a shift in international attitudes towards environmental management, and by the growing influence of the 'counter-narrative' in Thailand. However, the manner in which these ambiguous, populist terms have been interpreted and then applied by government agencies has often been quite different from the ways in which many of those advocating such concepts would have intended.

The current debate over the propsed Community Forestry Bill illustrates many of these tensions (Pinkaew & Rajesh 1996, Fox 1993, Poffenberger 1990). The concept of community forests (*paa chumchon*) is well established in Thailand, but with varying interpretations. NGO groups have advocated an interpretation of co-management which would allow for ultimate ownership to lie in the hands of local communities. However, the RDF has strongly contested this interpretation arguing

that local people lack the knowledge and skill to manage common property resources sustainably, and are unable to define what forms of resource use would be in the national interest. For the RDF, natural resources are national resources that should be managed by a centralized national authority. The difficulties of managing large areas of common property resources (particularly with regards to funding and manpower) has led the RDF to a pragmatic recognition of the need for some form of co-management. However, in the RDF model of co-management, local people would become agents of the RDF, in some situations being employed by the RDF. For the 'counter-narrative', centralized policies towards natural resource management have already led to environmental degradation and inappropriate policy by disregarding local knowledge and practice, and existing local community management institutions.

At the time of writing the debate concerning the interpretation and enactment of a Community Forestry Bill is unresolved. However, many of the attitudes of the RDF towards the place of rural people in any form of co-management are revealed in the following interview with Sahiya Sawinthorn, Deputy Director, RFD from Office of Reforestation and the Office for Conservation.

> "Generally we do no want to have people living in protected areas (ie. reserve forests), because the protected areas are reserves for water and the natural environment.....We could allow people to live with the forest, but who will guarantee that the forest they are given will have more trees on it or that the environment will be made better for the country?...
>
> ... On the question of whether the RDF has basic understanding of the situation of village people in the forest (ie. reserve forests), I will speak frankly. It is not that we look down on them, but we feel that the knowledge of local people is not sufficient towards understanding the public good. They work all day so they can eat, they have no firewood so they can cut trees within the protected area because it is convenient. However, it is good that NGOs have proposed the idea of community forests. The RFD does not object to this idea one hundred

> percent, but it must be understood to what extent it is actually possible." (Watershed 1995 pp.9-12)

It is clear from the above quotation that the RDF feel the interests, practice and knowledge of rural people to be in conflict with their own management agenda. While the RDF may claim not to 'look down on' rural people, it is clear they feel rural people cannot be trusted to manage the forests 'for the country' (cf. chapter eight). Whether the RDF can be trusted any more to do so is ofcourse not raised. While there is a great deal of diversity in the attitudes of local government workers and rural people towards each other the suspicions echoed above are widely prevalent.

4.iv The Management of Freshwater Fisheries, Forests and Wetlands

Development and environmental policy in Thailand, as in many other countries, has until recently overlooked issues concerning wetlands and freshwater fisheries in favour of dryland forests and marine fisheries and aquaculture. There are several interrelated reasons for this neglect. Too often wetlands have been considered wastelands with limited potential for economic development, unsuitable for agriculture, and often home to disease. Their definition has been problematic (cf. Barbier 1989) and in terms of departmental responsibility, they have fallen somewhere between the departments of fisheries, forestry and irrigation.

4.iva Wetland Policy in Thailand

The problem of adequately defining wetlands in a tropical context has obviously hindered the implementation of a cohesive policy towards their management. Large, diverse areas of Thailand are seasonally inundated and thus might be classified as wetlands. As Sansanee Choowaew writes:

> "Thailand has various types of vast wetland areas including over fifty major rivers and their tributaries, riparian zones, floodplains, and

> flooded forests; over 8 000 freshwater marshes and swamps, lakes, ponds, estuaries, mudflats and deltas; 2 614 km of coastline, coastal zones, mangroves, peatlands, beaches, coral reefs, and seagrass beds; and over 2000 man-made water storage ponds and reservoirs, rice paddies, fish ponds, shrimp ponds, saltpans, and coastal aquaculture areas. The economic and social welfare of the Thai people, as well as the country, has been and still is greatly dependent on these highly productive wetland ecosystems." (1995 p.2)

A recent initiative by the OEPP to create an inventory of wetlands has run into similar definitional problems (Stefan Flos pers comm 1996).

Wetlands have been utilized in a variety of ways and their future development offers a range of possibilities. For Pearce and Turner (1992) the multifunctional feature of wetlands leads to social inefficiency as 'some of the multiple uses conflict with each other'. The diversity of wetlands and of human activity in these areas has brought a number of different government agencies to claim them as their own. The problems of co-ordination between government agencies has already been discussed. As Sansanee Choowaew continues;

> " There are no specific laws, regulations, or responsible agencies to support the maintenance of the natural state of wetlands. Sectoral organization (eg. agriculture, irrigation, fisheries, wildlife, forestry, transport, industry, tourism etc) have adverse implications for wetlands because of the potential impact of all sectors." (1995 p.3)

The recent interest in forests in Thailand has also largely overlooked wetlands. Brookfield and Byron's (1993) study of environmental issues in Southeast Asia make only one pasing reference to wetlands. Most of the literature on forestry in Thailand is concerned with the drylands of the Central, Northern and North Eastern areas (Hirsch 1990b, Hirsch & Lohmann 1989, Rigg 1995). Both the South and the large numbers of wetlands have been neglected. More recently, some categories of wetlands, particularly mangroves, have enjoyed a renaissance of intenational

environmental concern (see Scott 1989, Dugon 1990, Maltby 1992, Maltby et al 1996). Significantly figures for deforestation in much of the recent literature on the environment in Thailand also ignore the deforestation of wetlands. Hirsch incorporates wetlands in a category of 'swamps' for which figures are not available (Hirsch 1990b p.167). Even in the current era of environmental concern, wetlands other than mangroves have a great deal of catching up to do. This is partly due to the general representation of wetlands as marginal, inhospitable habitats, and perhaps, the use of the term 'swamp'. In the representation of the environment that guides state conservation policy, such perceptions of wetlands hold little potential. Economic valuing of wetlands is highly problematic since much of this value is not based on use (Barbier 1989). This is particularly significant when the conservation of environmental resources is legitimised in terms of their aesthetic value and potential for tourist development.

Pinkaew Laungaramsri and Noel Rajesh (1996) write of RDF promotion of ecotourism and attitudes towards wetlands.

> "A forestry official, former chief of one of Thailand's wildlife sanctuaries, explains why wetlands have never ranked highly with the forestry department's protected area system:
>
> 'There are two main reasons why wetlands and lowland riverine forests have been neglected by the national park technocrats. First, these areas are not large, most of the mangrove areas distributed along the coast are viewed as trivial and unimportant. Second, and most important, they are viewed as lacking in the scenic value desired for tourism compared to the natural dryland forests.'
>
> It can therefore be argued that establishing the protected areas system is a process where natural ecosystems area viewed not in terms of local community benefits or ecological significance, but in terms of economic value as a tourist destination. Mangrove forests on the other

hand are assigned productive value for charcoal and shrimp farming" (Watershed p.18)

However, growing international concern over the loss of wetlands and their important biological functions has generated renewed interest in wetland ecosystems (eg. Dugan 1990, Maltby et al 1992). As a signatory of the Ramsar International Convention governing the management of wetlands, Thailand is required to nominate a wetland site to be managed in accordance with the Convention's guidelines. These guidelines advocate the sustainable use of wetland ecosystems. As Sansanee Choowaew (1995) notes, the diversity of potential resource uses of wetlands are not easily compatable with each other, or with conservation concerns. The difficulty of meeting the requirements of the Ramsar Convention has so far held up any final decision. At the time of writing three sites were being considered; Khao Sam Roi Yod National Park, Beung Boraphaet and the Thale Noi Non-hunting Area. As yet, no decision had been made as to which site should be nominated. The final decision rests with the Office of Environmental Policy and Planning (OEPP).

4.ivb Freshwater Fisheries

The freshwater fisheries sector has similarly been neglected. This is largely due to the greater economic potential in terms of percentage of GDP offered by the marine sector. According to Anat Arbhabhirama et al (1988), prior to the 1950s state policy towards fisheries was concentrated on the freshwater sector. At this time, most fishing was for consumption or internal markets. Even the marine fishery was restricted to coastal, artisanal fishing rather than deep sea fishing. For Anat et al, the First National Economic and Social Development Plan of 1962 set a trend that has since continued in which the emphasis was placed on the development of the export earning potential of the marine sector. This sector has consequently grown phenomenally. From 1974 to 1982, the volume of marine fishery exports rose from 88 221 tons orl 549 million Baht, to 344 899 tons or 12 677 million Baht (Anat Arbhabhirama et al 1988).

The boom in the marine fishery has had two important effects on the freshwater fishery. State resources have until recently been concentrated on the marine sector, except for the development of aquaculture (which has largely been targetted at coastal shrimp aquaculture). The huge increases in production of the marine sector have also led to greater market availability of previously more expensive salt water fish. This had generated significant competition for the small-scale freshwater fishery (MacFadyen 1993).

4.ivc Freshwater Fisheries Policy

The management of freshwater fisheries has suffered from the centralization of bureaucratic authority that has affected most other governmental agencies. Policy is designed at the national level in broad terms, with only limited flexibility at regional level (McGregor et al 1995, Masae 1996). The main objectives of fisheries policy are to reduce fishing effort, to rehabilitate fishery habitats and to generate non-fishing sources of income. The main tools of fisheries policy can be divided into four categories:

- reducing fishing effort through the implementation of fishing seasons, restricting gear types and licensing,
- restocking of water bodies
- establishing reserve areas
- introduction of aquaculture

Masae and McGregor (1996) argue that freshwater fishing is regarded as being an occupation for the poor. Since it is regarded as having limited potential for development other than through the introduction of aquaculture, state interest has been in terms of poverty alleviation rather than specific fisheries policy. Attempts to target poor fisherfolk have been directed at alternative or complementary economic activities. In general terms, the freshwater fishery is regarded as having no real future in its present form and no real prospects for economic development (Masae and McGregor 1996).

However, this has not always been the case and there remains some regional variation. As Anat et al (1988) observe, until recently fish and rice have been the staples of the rural diet. Prior to the growth of the marine sector, most of the fish consumed in Thailand were freshwater fish. Thailand has a long history of rice cultivation and catching or rearing fish (Anat 1988). Small fish ponds were, and still often are, a common feature of rural livelihood strategies. Indeed the cultivation of rice and the harvesting of fish were complementary. When flooded rice fields became important habitats for fish. Perceptions of rural plenty are reflected in the much cited adage of '*naa mii khaow nam mii plaa*'; the fields have rice, the waters have fish. However, the use of insecticides and new varieties of rice have not been compatible with such fishing practice and in many areas it has died out (Anat 1987, Sollows 1991). In the last decade the importance of fish for rural economies and diets has been recognised once again. This has led to the 'extension' of such practice by DOF and NGO workers, particularly in Isaan (see Sollows 1991).

The apparent decline of the freshwater fishery in Thailand can be attributed to a number of factors. However, there are no precise explanations as to the extent of the decline or to its exact causes. The main thrust of DOF policy attitudes to the freshwater fishery are based on a belief that fishing effort has increased beyond a maximum sustainable yield. This is partly attributed to rising populations and degradation of fish habitats. The building of roads, reservoirs, dykes and dams all has had an impact on fish habitats and on the hydrological patterns of flood season water flows (cf. MRAG 1994). Added to this are the increases in more efficient fishing gear, including the use of illegal gear such as cyanide, dynamite and electricity. Even though environmental degradation may be a more significant factor in the overall degradation of the fishery it is less easily targetted by a department with such a limited remit as the Department of Fisheries. Consequently, DOF policy has been targetted at reducing fishing effort. However, at the regional level much of the policy tools for reducing effort (eg. minimum mesh sizes, licenses, closed seasons) are weakly enforced (Masae and McGregor 1996, MRAG 1994).

The DOF's enthusiasm for the extension of aquaculture is partly a recognition of the inability to target environmental degradation, and partly a recognition of the

inevitability of the loss of wild freshwater habitats. It also represents a faith in the technical capacity of DOF aquaculturalists, and in the ability of rural people to incorporate aquaculture into their livelihood strategies. Contemporary interest in aquaculture echoes many of the themes and issues of agricultural development of the Green Revolution, and has even been described as a 'Blue Revolution' (Coull 1993). As with the Green Revolution there are serious concerns over the cultural and economic appropriacy of aquaculture for rural people and the processes of research and extension. There are also significant issues of environmental and economic sustainability concerning highly input-dependent aquaculture.

The decline of freshwater fisheries may be an indication of wider environmental degradation (MRAG 1994). Freshwater fisheries and wetlands are complex ecosystems rich in biodiversity. The loss of a main component of such an ecosystem may well have far-reaching implications (cf Maltby et al 1992).

4.ivd Fisheries Co-management

The specific features of wetland fisheries (eg. multiple resource use, seasonal dynamism and vulnerability, levels of uncertainty, diverse stakeholders) suggest that some form of comanangement is inevitable. The recent recognition of the value of local knowledge and local CPR management that has influenced forest management has also influenced approaches towards freshwater fisheries management, particularly as adopted by the populist 'counter-narrative'. The capacity of rural peoples' to manage their fishery resources through co-operation and the application of local knowledge has been widely discussed. This literature tends to reflect international priorities and is thus concerned with coastal and marine fisheries, rather than with floodplain fisheries (see Hviding & Baines 1994, McGoodwin 1991, Berkes 1989, McCay 1978). However, a significant literature also deals with wetland and floodplain fisheries (see Bernacsek 1992, de Merona 1992).

Perhaps the most significant difference between these two types of fishery is that wetland fisheries tend to form part of a wider resource profile. Consequently

approaches to co-management of fishery resources need to address the relative significance of fishing, and other resource uses. Two examples of freshwater fisheries co-management are taken from Thailand.

The traditional practice in Northeastern Thailand of combining rice farming with some form of rearing of fish in rice fields is described by Sollows (1991) as having collapsed as a result of the introduction of high yielding varieties of rice. The use of pesticides that such rice varieties required are argued to impede the rearing of fish. Sollows describes how NGO and DOF workers were able to co-operate in reintroducing a 'lost' indigenous practice.

Another fisheries management strategy that has been adopted with varying degrees of success in the South of Thailand, including Thale Noi, is that of establishing reserve areas, and in some cases rehabilitating these reserve areas. The major obstacle to such a strategy is ensuring that the reserve area has some sense of legitmacy in the eyes of the local community (cf. Ostrom 1990), and that they are able to monitor the area to prevent outsiders fishing. According to Pierce et al (1993) if the establishment of reserves has local support the rehabilitation of the fishery is noticeable within a few years. An important issue to bear in mind is that of the distributional effects of establishing reserve areas. It should not be assumed that community support equals universal support within the community. The demarkation of a reserve area is often problematic as the reserve area will inevitably lie within the fishing grounds of some sections of the community. As Rigg's (1991, 1993a) discussion of grass-roots development would suggest, it would not be unreasonable to expcet that those who lose fishing grounds through the establishment of a reserve area are the weakest in the community.

The above examples of co-management illustrate the existance of indigneous management techniques in Thailand, and also their growing (if gradual) recognition by government departments and NGOs. However, the viability of such management strategies is influenced by the same range of factors as affect forest management. These issues will be drawn out in the following discussion of the case-study material.

4.v Conclusion

This chapter has sought to place issues of environmental managemnet and development concerning the Phru Khuan Khreng in a wider context. As an area that has until recently been regarded as remote, with limited potential for development the Phru Khuan Khreng is now becoming more fiercely contested.

As will become clearer during the course of the following chapters, current state policy and attitudes towards the Phru Khuan Khreng reflect many of the issues discussed in this chapter. State policy towards the Phru is inconsistent and contradictory. There is poor co-ordination between government departments, and often they find themselves competing with each other. On a macro-level policy towards the Phru is being defined by national development strategies that emphasise export-led industrial growth. The Phru is being deined as a marginal part of the wider Songkhla Lake Basin. Macro policy is based on belief in the technological and institutional capacity to refashion the environment with the building of barrages and reservoirs. At the same time the Phru is being proposed as a site of conservation value and is being targeted as a national park and a site for ecotourism development.

Historically state involvement in the Phru has been fuelled by security interests. The Phru has always been regarded as an unruly and troublesome area, and this perception still permeates much state thinking towards the Phru. Indeed the overriding attitude that the Phru has limited potential for development because of its 'nature' and population continues to dominate state policy. Much of the policy that has become manifest in the Phru has been in the form of roads, electricity, digging canals and in policing the Non-hunting Area. Environmental damage is argued largely in terms of local responsibility. The only fishery project to be introduced to the Phru has been the Special Aquaculture Project. This will be discussed in detail in chapter seven as it reflects many of the attitudes towards development and fisheries policy that have been raised in this chapter.

Alternative approaches towards management of the Phru Khuan Khreng, including those emanating from the local population echo many of the tensions highlighted by

the counter-narrative. On one hand state-led development has been welcomed, although has not reached all. However, the costs for the environment and the poorer sections of the Phru are still being wieghed. While state policy emphasises issues of environmental management, local interests tend to be in terms of poverty, of growing village stratification, land rights and meaningful political participation. The legitimacy of the state to act and of its knowledge capacity is frequently challenged in the Phru. There is interest in local small-scale initiatives, and suspicion of state motives. Ultimately there is conflict over who should have control over the resources of the Phru, and whether those resources should be purely environmental resources.

The picture on the ground in the Phru is far more complex than of a clash between the narratives of the state and the counter-narrative. However, this debate forms a useful framework in which to present the material from the Phru. If the recommendations for incorporating multiple realities into the development process are to be taken seriously, the political background to development and environmental management must also be assessed.

CHAPTER FIVE

THE PHRU KHUAN KHRENG

5.i Introduction

The discussion will now centre on the Phru Khuan Khreng. This chapter will provide essential contextual information concerning the way in which the Phru is perceived and classified, and the main management strategies and institutions. The general background of the two villages in which the research was carried out, Baan Paa Sombuun and Baan Glaang Phru, will be presented.

The Phru Khuan Khreng is a large wetland forest that lies at the northern end of the Songkhla lakes, adjoining the small freshwater lake of Thale Noi. Administratively the Phru lies in boundaries of three provinces (*jangwat*): Nakhorn Sri Thammarat, Patthalung and Songkhla. The Phru stretches north to the Pak Phanang river. To the west stretch the mountains of the Khao Banthad range and to the east the coast of the Gulf of Siam. It covers an area of 195 545 *rai* (31 287 hectares, or 335.3sq km). Along its perimeter are a string of settlements that utilise the resources of the Phru to varying degrees. Within the Phru itself are a number of more isolated settlements. Some of these have a population of twenty or thirty households, while other larger villages have over three hundred households. Several of these settlements have been established on the higher ground that lies at the base of several small hills (*khuan*) for over a hundred years. Some of the settlements in the low-lying areas were only settled two generations ago. Environmental and social conditions vary enormously between and within these villages.

Until recently the Phru was remote, only accessible by small long-tail boat. The construction of dirt roads during the last ten years, even though not passable all year, has greatly improved communications. This is having a profound effect on the lifestyles of people in the Phru. Improved communications has led to increased market activity with surrounding towns, particularly Cha-uat, Hua Sai, Ranot, Patthalung and Thale Noi. Many people from the Phru take goods, particularly fish and *grajut*, to surrounding markets. Travelling traders and sales people are a

common sight in the larger villages that are served by roads. Yet the most significant trade is in the labour of the villages, with many men seasonally migrating to work on urban construction sites. As one of the last remaining remote areas of southern Thailand the Phru Khuan Khreng is increasingly being targeted for state development.

5.ii Overview of environmental change

Over the last thirty years the Phru Khuan Khreng has witnessed dramatic environmental change. A series of forest fires between thirty and twenty years ago, with smaller less devastating fires as recently as fifteen years ago, destroyed much of the indigenous mixed wetland forest cover. This has led to the forest cover being dominated by melaleuca leucadendra (*dton samet*). Melaleuca is a colonising tree and is able to withstand high levels of acidity (see Anond 1997). It also relies upon changing water levels of floodplains, and is not believed to be able to survive in permanently standing water (Taylor and Sons 1985). The main other forms of vegetation are the two varieties of sedge grass; lemna minor (*grajut*) and eleocharis ochrostachy Steud (*grajut nuu*) which can grow within the melaleuca forest or in patches on their own. *Grajut* (lemna minor) is used extensively for manufacturing mats and other handicraft products. Its cultivation and use has become the most ubiquitous activity in the Phru. Associated with the changing forest cover has been the reported increased acidity of soils and waters, and changing water flows. Conditions of acidity are often very localised and may vary according to seasonal changes. These processes of environmental change have been so rapid that they are still being assessed by people living within the Phru Khuan Khreng.

Detailed local and state perceptions of environmental change will be discussed extensively in later chapters. For the present purposes, environmental conditions will be discussed more generally. As with other tropical wetlands, seasonal change is dramatic and provides the environmental context in which people have learned to utilise the natural resources of the Phru. The most obvious features of the Phru Khuan Khreng are the change of forest type and loss of forest cover, changing levels and acidity of water, and a perceived decline in the fishery and forest animal life.

There is much discussion among local people concerning the changing water levels of the dry and rainy seasons. The details of these discussions will be revealed later. For now it is sufficient to say that the difference in water levels from the height of the dry season to the peak of the floods is dramatic. During the heavy monsoon period so the Phru appears to be a forested lake. Low lying areas are completely covered, nearly all roads are under water and only the high ground of the *khuans* and the periphery remain free from flood waters. In the dry season the waters recede to such an extent that many areas of the Phru are completely dry, the soils turned to dust and the earth cracked and parched. Within the heavily forested areas of the Phru, at least a certain amount of water remains throughout the year. However, there is a strong local perception that these seasonal changes have become more marked. It is said that in recent years the dry seasons have tended to be drier, and the rainy seasons wetter. The last three years have witnessed such extensive flooding that rice cultivation has not been possible. These local perceptions will be discussed in a great deal more detail later.

5.iii Classification of the Phru Khuan Khreng

The way in which the Phru is perceived and valued has profound implications for the way in which it is managed. Whether it is to be considered a marginal wasteland, an area of great ecological value, or a potential freshwater reservoir will clearly affect how it is to be managed. A central feature of the current environment-development debate in Thailand is the re-assessment of the value of certain natural resources.

Classification of the Phru Khuan Khreng according to forest-type has been problematic. The term '*phru*' is commonly used in Thai as a general term for a swamp forest. In academic literature '*phru*' is sometimes applied to swamp forests in general, but other times to peat swamp forests in particular. Thawatchai et al (1985) acknowledge the confusion in classifying wetland forests in Thailand and identify three main types which they classify variously as 'mangrove forest, freshwater swamp forest and peat swamp forest' (1985 p.205). For them the term '*paa pru*' (*sic*) refers exclusively to primary peat swamp forests comprising mixed forest vegetation. Their

status as primary forests makes them high priority targets for conservation. They go on to argue that there is only one peat swamp forest in the whole of Thailand, namely the Phru To Daeng in Narathiwat province in Southern Thailand (cf. Scott 1989, Anond 1997). What distinguishes the Phru To Daeng from the Phru Khuan Khreng is the fact the predominantly melaleuca cover of the Phru Khuan Khreng is a 'secondary vegetation type' (Thawatchai et alp.205) that colonises degraded forest. Accordingly they argue that the Phru Khuan Khreng should be classified as a melaleuca forest (*pa samet*).

Peat swamp forests have particular features that distinguish them from other wetland areas. The tendency towards acid-sulphate conditions when soils and waters are exposed to the air and oxidised are perhaps the key feature. The potentiality towards high acidity supports a particular ecosystem. Thawatchai et al (1985) argue that degraded peat swamp forests that have been colonised by melaleuca cannot be rehabilitated. Both melaleuca and peat swamps are considered by some to hold a rich variety of flora and fauna; important spawning and breeding grounds for fish, as well as for amphibians and birds (Scott 1989). Until recently the full ecological value and significance of such forests had been overlooked. Peat swamp forests were considered to offer limited potential for agricultural development, and their fisheries were considered to make an insignificant contribution to national development. However, in recent years there has been growing interest in conservation of peat swamp forests (Maltby et al 1996). They are now being presented as important in terms of their drainage function and contribution towards biodiversity.

There is also growing concern for melaleuca forests in their own right (Maltby et al 1996). Despite being a secondary vegetation that has almost exclusively replaced the mixed wetland forest, melaleuca is increasingly seen by government workers and academics as being an important natural resource in its own right. According to Scott (1989) the Phru Khuan Khreng is probably the largest melaleuca forest in Thailand. Recent regional projects have sought to improve the image of melaleuca and illustrate its potential economic and environmental benefits. These benefits are well acknowledged in Vietnam, but it would seem that there is a lingering prejudice in Thailand (Safford pers comm 1996). There is a popular perception in Thailand in

which the spread of melaleuca is associated with processes of environmental change for which melaleuca is blamed. As one leading academic confided in private conversation;

> "I don't like melaleuca. It is a weed. It has taken over what used to be rich diverse forests but is itself useless. It makes the soils and waters acidic."
>
> (N. 1997 pers comm)

Such views enter the management debate as condemnations of the naturalness of melaleuca; it should not, and would not be there were it not for the (unnatural) interventions of man. The uncertainty regarding the classification of the Phru as a melaleuca forest (or 'secondary' forest), or as a peat swamp forest leads to some doubt as to what can be referred to as the 'natural' forest cover. There is therefore, some doubt as to what environmental conditions (ie. the existing forest), or processes (ie. the environmental transition) should be conserved or encouraged. The processes of change that have led to the replacement of mixed peat swamp cover by melaleuca is used by some to illustrate the inherent dynamism of the ecosystems. Thus dramatic environmental change may be something to be encouraged and not prevented. In comparison to Vietnam melaleuca resources remain under utilised in Thailand. This is partly attributable to the logging ban which removed the right of villagers' to cut melaleuca for charcoal production (Parr 1994), but as will be seen in ensuing discussions, there are many other reasons. At this point it is worth noting that there remains a great deal of uncertainty and confusion concerning the value of melaleuca and the wider environmental changes that have allowed melaleuca to predominate.

Classification of the Phru also has implications for the assignment of responsibility for its management to various government departments. For example, if the Phru were categorised as a forest it would fall under the jurisdiction of the RDF. If it were to be classed as a fishery it would fall under the jurisdiction of the DOF. If the RID were able to present a convincing case for the Phru to be turned into a freshwater reservoir, it would be a means by which they claim rights to management of the Phru. As Rigg (1991) and others have commented, co-ordination between line ministries is

often poor and they often find themselves in conflict for access to their own 'empires'. This is particularly true of the relationship between the longest established government departments responsible for natural resource management ie RDF, RID and DOF.

Under the existing management regime, the Phru is classified as a forest and waterbird park and thus falls under the jurisdiction of the National Parks division of the RDF. It is managed as a Non-Hunting Area; the lowest status of national park in Thailand. All natural resource management projects (eg. digging of *khlongs*, building of roads) requires prior approval from the RDF. However, many RDF officials complain that this does not always happen. The Phru is now a battleground in which government departments fight for influence through the mechanism of initiating projects. This is an important backdrop to the conflict of interests between RID plans for a reservoir and the RDF's commitment to conserve and rehabilitate the melaleuca forest (NB This will be dealt with in more detail in chapter seven). Up to now, the Phru has not been classified as an important fishing ground but is increasingly being referred to in this way by the DOF at the regional level. Complaints from fishers in Thale Noi about the detrimental effects on their fishing grounds of environmental degradation in the Phru further raise the profile of the Phru as an area of great significance for the whole fishery. At present there are also attempts by the RDF to upgrade the status of the Phru. There is also renewed RDF interest in promoting eco-tourism and community forestry management of the Phru (Somjai 1994). Under recent legislation, all development initiatives from the above government departments with an environmental impact must receive approval from the Office of Environmental Policy and Planning (OEPP). The OEPP presents the broad framework within which policy at the local level is developed. The OEPP is ultimately the body that will decide the environmental dimension to the way in which the Phru is classified.

The Phru Khuan Khreng covers a wide area and includes different types of vegetation, with different physical features. Environmental conditions and resource use patterns differ in each area. The Phru Khuan Khreng has been classified according to three categories (CORIN 1994) of vegetation and related elevation. The

vegetation of the lowest part of the Phru is classified as comprising 'cyperus and grass', the middle area as comprising 'melaleuca and cyperus', while the upper area is classified as comprising 'melaleuca and grass' (CORIN 1994, p.A1). CORIN also distinguish the low-lying sparsely forested lands, the thick forests of melaleuca, and the higher lands of the *khuan* and the periphery. Such a classification system obscures the diversity that is often in evidence at the local level. The boundaries between these different types of vegetation are often blurred, and indeed may change over relatively short periods of time.

Local people themselves make several distinctions in classifying areas of the Phru. Firstly a distinction is drawn between the wetland forest as a whole and the areas of the melaleuca forest. In this text the term 'Phru' shall be used as an abbreviation to refer to the whole wetland area. The term '*phru*' will refer specifically to the melaleuca forested areas. Some of these forested areas are designated as reserve forests by the RDF and are known as '*paa so-nguan*'. This is a term that is not automatically used in casual conversation among locals. Other forested areas are found on the *khuan* and are referred to as such. It must be noted that land cannot be owned in the *paa so-nguan*, but can be owned on the *khuan*, and that not all *paa samet* lies within *paa so-nguan*. In terms of fishing, local people draw distinctions between fishing in the *phru*, or in *khlongs* or in the area infront of the homestead (*naa baan*). The conditions in each of these areas varies in terms of vegetation, accessibility and fauna.

Zoning is an issue that has been taken up in discussions of management of the Phru Khuan Khreng. For example, Parr (1994) argues that a compromise between conservation interests and economic needs of local people can best be met by defining zones of conservation and of economic activity. This has already been partly established with reserve forests (*paa so-nguan*). This is a theme that is present in many management proposals for the Phru. However, if taken to its logical conclusion such an approach represents an attempt to impose a system of classification on the Phru, and to refashion the physical and socio-economic environments.

5.iv Ecological Significance to Surrounding Area

A great deal of controversy surrounds the issue of the ecological significance of the Phru Khuan Khreng to the surrounding area, and underpins much of the conflict associated with various large scale-development projects that are planned for the area. The ecological function of the Phru has become an important issue with the advent of attempts to manage the Songkhla Lake Basin as a whole, stretching from the Pak Phanang river in the north to Songkhla in the south (see map). The only large-scale studies of the Phru to have been carried out have been as part of environmental impact assessment studies for the construction of the Songkhla Lake Basin barrage (J.Taylor and Sons 1985), and for the Royal Irrigation Department's plans for building a series of embankments around the Phru to provide a fresh-water reservoir (see CORIN et al 1994). Neither of these studies can consider out of the political context in which they were completed. It is however possible to say that scientific understanding of the Phru is limited.

As with other wetlands the Phru is argued to play an important role in the hydrological patterns of the surrounding lake basin. A series of canals (*khlongs*) allow waters to drain to Thale Noi in the south, the Pak Phanang river in the north and to the coastal areas of Ranot and Hua Sai in the east. This interweaving network of *khlongs* and waterways flows into an even larger complex that incorporates the whole of the Songkhla Lake Basin. This picture of the Phru is often presented to justify a more holistic understanding of the Phru and the Songkhla lake basin. During the rainy season the Phru receives run-off water from the Khao Banthad mountains (Parr 1994 p.9). Water flow in the Phru is affected by rainfall and by run-off from surrounding mountains. The tidal influence of the Pak Phanang river is also said to be significant influencing the direction of water flows into and out of the Phru (Dr Somsak pers comm). At times water flows from the Phru to Thale Noi particularly along the Ta Khreng canal. Water drains eastwards to the coast via a series of smaller canals.

The Phru is widely referred to as a place of special significance for flora and fauna. In particular it is thought to be of importance as a habitat and breeding ground for fish

and birds (Taylor and Sons 1985, Parr 1994, Masae and McGregor 1996). The presence of large numbers of a variety of species of waterbirds in the Phru and Thale Noi led to the establishment of the Thale Noi Non-hunting Area in 1975. The development of 'ecotourism' based upon the presence of the waterbirds is advocated by a number of organisations including the Tourism Authority of Thailand, the RDF, the Bird Conservation Society of Thailand, and the Office of Environmental Policy and Planning. The Thale Noi Non-hunting Area has also been proposed as a possible site to be covered under the Ramsar Convention, should Thailand be accepted.

The significance of the Phru to the surrounding fishery remains a contested issue. The Phru is known to be an important habitat for a number of species, as well as a breeding and spawning ground for fish in Thale Noi (Taylor and Sons 1985 p.4-24). Fish are known to migrate in both directions between the Phru and Thale Noi, and many fishers from Thale Noi enter the fishery of the Phru. There is a strong local perception that the fisheries of the Phru and of Thale Noi are interconnected, even if the exact details are unclear. There is an equally strong and universal perception among local people that the fishery is part of a wider ecology that incorporates trees and water. The discussion of contested notions of the relationship between fish, waters, trees and people will form the basis of chapter six.

5.v Management of the Phru Khuan Khreng

There remains the issue of whether the Phru should remain a wetland; in its present state as a melaleuca forest, or in some rehabilitated state, or as a more or less permanently flooded reservoir (RID).

Since 1975 the Phru Khuan Khreng has been administered by the RDF Division of Wildlife as a part of the Thale Noi Non-hunting Area. The RDF (known locally as the 'conservation group' or *'glum anurak'*) has a headquarters at the village of Thale Noi but also employs local people at three sub-stations within villages in the Phru. Their main responsibilities are to prevent the illegal hunting of birds and animals, and the illegal chopping of wood in the forest reserves (*paa so-nguan*). During the drier

months (usually from February to August) the RDF employs locals to work in the Forest Fire Prevention Group. Fire remains a serious threat to the forest cover, and starting fires can be punishable with imprisonment. In the dry season local people clear some areas of *phru* to facilitate access to certain areas or to clear land for agriculture, or more commonly for digging of refuge traps. Fire has been used by local people to manage the *phru* since they first settled.

Although much of the land in the Phru is privately owned, the majority of the melaleuca forest now lies in the protected areas of the reserve forest (*paa so-nguan*). As such the hunting of birds is strictly prohibited as is the chopping of wood in protected areas, hunting of animals. Fishing is however permitted in these areas and fishing activity remains the responsibility of the Department of Fisheries. Within the Non-hunting area there are three main protected forest reserves (*paa so-nguan*).

Prior to this legislation which placed the ownership of all land under the Crown, but allowed for limited forms of title (although full legal land title is rare), the forests were in effect managed locally. Communities made claim to large areas of forest that they were able to patrol and monitor. The relative vastness of the forests meant that areas that lay beyond the effective control of Phru communities were virtually open-access. Under current legislation villages maintain control of some commons areas, and have exclusive rights to fish in specific areas of the reserve forests. Despite the complex legal status of land in the Phru it is clear that there is a great deal of illegal land claiming. Many people hold forms of title of dubious legal standing. Issues concerning access to forest resources and land title are highly contentious issues in the Phru (as they are in other parts of Thailand). The confused land rights situation in the Phru has been cited by RDF officials as being the main impediment to raising the status of the Phru to that of a National Park, and is frequently a cause of tension between villagers and government officials. There is a popular perception among many local people that landlessness is the most pressing local problem.

There has been a dramatic shift in official attitudes towards the Phru among leading government officials in Bangkok. The difficulties of development that were so prominent in early discussions with officials in Bangkok (as well as in the provinces)

have given way to a new discourse in which the Phru is presented as an area with great potential for development. A number of initiatives have been undertaken, or are currently under discussion.

a) The Office of Environmental Policy and Planning (OEPP)

The OEPP is responsible for providing the framework into which departmental activities must fit. Their main responsibility is to assess the policy recommendations of other departments. Presently the OEPP is considering a number of options for the Phru Khuan Khreng. It is attempting to juggle its twin objectives of protecting the environment but also allowing rural people to gain from economic activity. Thailand has become a signatory to the Ramsar Convention and is proposing the Phru Khuan Khreng as one of three possible sites to be administered in accordance with the convention. A final decision has not yet been made.

Policy recommendations for the Phru are based on the principle of "integrated use of natural resources and decreasing conflict of natural resource use" (P. pers comm 1994). Their main objectives are to preserve the water supply and biodiversity of the Phru which are regarded as being integral to the well-being of the wider Songkhla Lake Basin. Other than discussing the future status of the Phru (and the Non-Hunting Area), the OEPP's main recommendation is to encourage 'eco-tourism'. The OEPP is also required to assess the environmental impact of the departmental proposals outlined below.

b) Royal Irrigation Department (RID)

The RID carried out the most extensive study of the Phru so far as part of its environmental impact assessment of plans to construct an earthen dyke around the Phru and convert it into a reservoir. This project has been put on hold until further

studies can be carried out, but at the time of writing it appears to have been shelved. It is a project that has caused a great deal of local level concern and discussion.

The reservoir project aimed to provide a freshwater reservoir for agricultural activities at the northern edge of the Phru. It was argued that increased water levels would by themselves lead to increased fish stocks, and to *grajut* growing to a greater height. Local concern focused on the possible interference with water flows and associated fish migration and breeding habits. It was also unclear what effects permanent standing water would have on the melaleuca forest. There was also concern among cattle rearers. Further doubts about the technical and administrative capacity to manage the system of weirs and sluice gates were also widely voiced. Even though this project appears to have been abandoned it is still widely discussed and formed an important backdrop to the village level research.

c) The Royal Department of Forestry (RDF)

The RDF has a number of broad policy objectives for the Phru, as well as managing the Phru under the Thale Noi Non-hunting Area. The Phru has now officially been recognised as an area of great ecological importance and developmental potential. Policy for the Phru is based around the following objectives;

i) the prevention of clearing of the melaleuca forest, and reforestation of the Phru with melaleuca and mixed wetland species
ii) the establishment of zones of activity, including areas of community forests
iii) the encouragement of eco-tourism for the area.

The precise form that these proposals might take is as yet unclear. Proposals regarding the establishment of community forestry projects will be discussed in more detail in chapter eight.

d) The Department of Fisheries (DOF)

As has been repeatedly stated, the DOF has historically paid little attention to freshwater capture fisheries, and particularly to those in wetland forests. There is no specific policy directive that comes from the Head Office of the DOF in Bangkok that affects the Phru. Most policy is developed at province (*jangwat*) level, although fishing activity in the Phru is still technically governed by general freshwater fisheries policy. This policy deals with the types of gear that may be used, the size of mesh, the location of gear, the licensing of gear, the prohibition of fishing in *khlongs*, and the closed season of fishing. None of these policies is actively enforced in the Phru. There is a great deal of confusion concerning fisheries policy. Information provided at district and provincial level does not always coincide with that provided at the national level. According to district level DOF officials, gear used in the Phru is all classified as 'amateur' gear and does not require licensing. Fishing seasons are not enforced. The major issue of concern is the use of refuge traps (*bor lor plaa*), but existing legislation regarding this form of fishing is not applied.

Province and local level policy and activities will be discussed further in chapter six. More general recommendations for the development of freshwater fisheries focus on:

i/ restocking of both local and indigenous species
ii/ legislation (re. seasons, mesh size, gear type)
iii/ promotion of aquaculture (mainly for local consumption)

The only one of the above policies to be applied in the Phru has been the establishment of an integrated aquaculture project (fish-chickens-grajut) in Baan Glaang Phru. This project will form the basis of a case study in chapter 6.

5.vi Outsiders' Perceptions of the Phru Khuan Khreng

There are certain prevailing perceptions of rural Thailand and rural people that permeate development thinking at all levels. These perceptions are widely contested and have taken on a wider resonance with recent economic growth and development.

Forests and wetlands, and other marginal areas have strong cultural associations for the literate elites, and also for the people who inhabit such areas. The clash of these perceptions permeates much development and environmental thinking.

Historically the Phru Khuan Khreng has been a marginal area associated with the harshness of the physical environment and the waywardness of the local people. Indeed, the term '*khreng*' has two quite different meanings. When written with a shortened-vowel marker (as written in official documents including maps) '*khreng*' translates as 'remote' or 'backward' with pejorative connotations. When written with a long-vowel marker, the word '*khreng*' however means 'strong'. There is an interesting struggle between locals and outsiders as to which '*khreng*' should be applied. Unsurprisingly villagers themselves prefer the second meaning and a recently built school has adopted the second spelling of '*khreng*' in its name. A local history of the area ('*Khreng rue khreeng*') criticises the prejudice associated wit the first meaning, and argues that the hardships that local people have overcome in settling the Phru are deserving of greater respect, and thus the second spelling and meaning should be employed (Glin Tong Glab 1991).

These general perceptions partly explain the history of settlement and also of prevailing attitudes of state departments to the management of the area. Until recent times, the Phru was widely regarded as being of marginal value with limited potential for economic development (*gaan patthanaa men yaak*). Villagers and government officials often remarked how development in the Phru is limited by the ecological conditions. Large areas of the Phru are unsuitable for agriculture due to the high acidity of the soils and water.

For many years the Phru was widely considered to be a place of great danger. Even at the time of the first settlers of Baan Paa Sombuun some sixty years ago the area was heavily forested and home to many wild animals including tigers and elephants. The dense forest cover and high water levels made the Phru particularly harsh and inaccessible. Peat swamps similar to the Phru are also notorious for the disease elephentiasis (*rok tao chang*); a disease carried by mosquitoes that live off the sedge grass (*grajut*). These perceived dangers had kept most people out of the Phru, but

also made the area a place of settlement for those from surrounding areas who had no access to other land.

During the early stages of my research I had many discussions with a variety of people in the region concerning my research. The Phru is well-known and most people were surprised by my choice of the Phru as a research site. A common response was that there was nothing of interest there; or as one person put it "It doesn't even have a market". Other people made reference to the inhospitable conditions, particularly elephentiasis and the large numbers of mosquitoes. Even in Thale Noi many people I have met have a low opinion of the Phru and its inhabitants. Other reactions concerned the lawlessness of the area with stories of hold-ups and shootings, and the ignorance and poverty of the local people. One of the villages in which the fieldwork was carried out has a certain local notoriety and is often referred to locally as '*muubaan khamoy*' (thieves village). A number of notorious *jao por* (godfathers) came from the area and regular thieving raids (*blon*) were carried out in the outlying areas. Local stories abound of bandits hiding out in the dense forest. It is only within the last ten years with the advent of roads and the spread of the state's influence that widespread illegal activity has been curbed.

These anecdotes would be merely amusing background information were it not for the fact that these perceptions can be seen to permeate much of the policy of government agencies and attitudes of outsiders generally. The ignorance of locals is frequently presented as an explanation for environmental degradation, and the low standard of living. This type of attitude is well represented in the draft version of the feasibility study of the Songkhla Lake barrage. In the section on Baan Glaang Phru it is argued that:

> "The work is day to day in nature ie. when the villagers have finished weaving the mats, they sell the mats in the market and stop working. This habit results in some idleness and some poverty. Their life is not satisfying because of their lack of continuous work. When they need firewood they cut the protected

> trees, the cajaput trees in the marshland. If they want fish they will go fishing. If they have no rice left they will start to weave the mats to sell for cash to buy the food they need. They appear not to know how to make use of time or plan ahead." (Taylor and Sons p.18-21 1985)

The relationship between the people of the Phru and government officials is often strained and fraught with mutual suspicion. Government officials from outside the area often find it difficult to work in the Phru. Until very recently the Phru was largely impenetrable. Government workers found the people difficult, and in an era in which achieving some form of economic development was the benchmark of success, the Phru offered limited potential for development. However, it can be assumed that as in other remote and troublesome areas of Thailand the hidden agenda behind state development (particularly the building of roads and establishment of local vigilante groups) was for state penetration and pacification (cf. Turton 1987, Hirsch 1990). Some government officials confided that the (alleged) widespread illegal activity in the Phru and lack of respect for the law made cooperative work with the locals very difficult. It is often referred to as having 'just become modernised' (*peung jaroen*) as a result of the penetration of modernity in the form of electricity, roads, television, state law, and education. Rightly or wrongly there is a strong sense among local and district officials of mutual suspicion.

Locals often complain that the government never responds to their demands, and they rarely visit the Phru except very briefly. When they do so they are criticised by ordinary villagers for not taking the trouble to investigate the area more carefully, and for not eliciting the opinions and knowledge of local people. As one interviewee said, 'They (government workers) come and look around but don't really see or understand anything'. Most outsiders, including government officials, talk of fishing and *grajut* production as being the main economic activities of the local people. However, there is very little understanding that goes beyond this superficial impression. Recent small-scale state development initiatives have centred on the potential for developing these activities in the Phru. Larger projects (such as the irrigation reservoir project) are

being sold to local people in terms of their desirable effect on the fishery and on grajut production. There is of course a great deal of diversity in the way people are involved in fishing and *grajut* production. People are also involved in other activities (particularly livestock rearing, rubber, fruit and rice production).

The Phru has been the subject of a number of studies concerning the irrigation project, and birdlife. At other times students from PSU have conducted surveys for their studies. However, there was widespread dismay that the results and benefits of these studies had yet to be received by the people themselves. This has intensified suspicion and scepticism of state motives in working in the area. This doubt about the usefulness of research was very much apparent during my own time in the Phru and was subject of many heated discussions (see also chapter one).

There are many reasons for these popular perceptions of the lifestyle of people in the Phru. The dichotomy of forest/town as discussed in chapter three certainly implies that forest inhabitants are themselves in some way 'wild'. I would suggest further that to some extent the cultural differences between Southern and Bangkok Thai become even more intensified in villages of the Phru. To those who have been raised on an orthodox elite interpretation of Thai culture and values the behaviour of the people in the Phru would most likely be strange and somehow 'primitive'.

5.vii The Villages: Baan Glaang Phru and Baan Paa Sombuun

This research has concentrated on two separate villages that reveal differences in size, economy, situation, access to natural resources, communications and history. The villages share many similar resources but display differences in adaptation to changing environmental and economic conditions.

5.viia Baan Paa Sombuun

The *muubaan* of Baan Paa Sombuun lies to the north of Thale Noi on the southern edges of the Phru Khuan Khreng. It is situated in low-lying land, prone to extensive flooding during the rainy season.

The official current population is 63 households. However, this figure varies seasonally as a significant proportion of the village migrates to nearby urban centres. Typically this migration is seasonal, usually for two to four months at a time. The periods between the end of the rains and the beginning of the dry season (from January to April) is the time of highest outward migration. At this time of the year, large parts of the village are deserted except for young mothers, children and the elderly. During the period of the fieldwork there was usually a core population of between fifteen and twenty households, but for nearly every household there was usually at least one male member working in a nearby urban area. The population is reported to be in decline at the moment having reached its peak of 200 households over twenty years ago.

The village is based around a an L-shaped *khlong* that leads from Thale Noi, and then bends around to where a dirt road runs parallel with the *khlong* and leads back into Thale Noi (see map). Houses are built on stilts, mostly on the banks of the *khlongs*. Kin live close to each other, and villagers say that houses are built so as to provide a closeness to neighbours, but also to provide some degree of privacy. There are four or five more remote households; mostly comprising older, original settlers whose descendants have not remained in the village.

The *muubaan* actually comprises two villages: Pak Khlong which is connected by road to Thale Noi, and the village of Baan Paa Sombuun itself. There is some evidence of differing histories of settlement of the two villages, and of some political conflict between the two villages. The current *phuu yai baan* has been in office for the last four or five years and seems to have settled the previous disputes. While the present *phuu yai baan* lives in Pak Khlong, previously, Baan Paa Sombuun was the political and economic centre of the village. Nowadays Pak Khlong is the more vibrant having the school, more dry land and better communications. It is interesting to note that the area suitable for rice farming is the land behind Pak Khlong leading into Thale Noi, to which all villagers have access. The land most suitable for *grajut* cultivation is behind Baan Paa Sombuun.

Most houses are along the main *khlongs* but in Pak Khlong houses also spread further back into the hinterland. Access to most of the houses is by boat, although many houses are interconnected by man-made embankments, and wooden bridges. Many households keep chickens and ducks under the houses, with shelters for cattle nearby. Several households have small plots of raised land for growing fruit (eg.bananas, cashews, tamarind and sugar cane) and vegetables.

Baan Paa Sombuun has a certain notoriety for its poverty. It is one of the last villages in Patthalung province not yet to have been connected to electricity. A school in the village teaches children up till the age of twelve. Children over that age go by boat to the nearby schools in Thale Noi. There is no temple although there are ongoing discussions in the village regarding the possibility of building a temple in the near future.

From interviews it appears that the villages were settled some seventy years ago. The first settlers were a group of three related families that came from the Hua Sai and Ranot regions. They were very much pioneers pushing the agricultural frontier into environmentally and politically marginal areas. These pioneers were followed by other groups of settlers who had some close kinship connection with existing residents. At that time villagers were able to move fairly freely and claim marginal land for themselves. Land was cleared for rice cultivation which was the main economic activity. This history of land clearance and settlement in what are considered marginal areas is typical of much of Thailand. These communities have been classified by Hirsch (1990) as "frontier communities" living on a cultural and political frontier as much as a geographical frontier. Legal title to lands of such communities was ambiguous.

The population of the village reached a peak some twenty years ago. A series of events occurred that were to have a profound and lasting effect on the make-up of the village. The forest fires that affected most of the Phru had a profound effect in Baan Paa Sombuun. The name of the village can be translated as 'Village of the Healthy Forest'. Formerly the area around the village was a mixed green forested (*paa kheow*) with a variety of wetland trees (*paa lai lai chanit*). The fires left only

melaleuca and large open grassland areas covered in grajoot nuu. In the year 2510 B.E. a land reform programme was started that allowed those holding *Por Tor 6* in certain designated areas to upgrade their title to NS3K. Although the price to upgrade the land title was only in the region of 300 to 400 Baht very few people were able to take advantage of this opportunity. Most villagers had no contact with the market at that time, and consequently no disposable income. Those that did have access to necessary funds were able to buy up large tracts of land thus precipitating dramatic social differentiation within the village. This event is still referred to in the village as the time in which the village was split. Even today, it is not known in the village who exactly has NS3K for all these lands, but it is estimated that only ten households hold such title.

Eight years later in 2518 B.E. the village was hit by a serious flood that destroyed most peoples' rice crops, livestock and homes. Having lost so much in the floods and having received no support from the state, villagers were unwilling to pay the annual taxes that the government demanded of them. In retaliation the government downgraded the NS3K title to PT6. This move by the government, combined with the lingering fear of further floods marked the beginning of the population decline in Baan Paa Sombuun. Both these issues of flooding and land title are as relevant today as they were thirty years ago. For many villagers in Baan Paa Sombuun uncertainty over title, and lack of access to the resources of certain areas of the Phru (viz. *paa so-nguan*) combined with perceived environmental degradation remain the main concerns. People from nearby villages often joked that Baan Paa Sombuun should be called 'Baan Somboon' since all the forest (*pa*) has gone (*met leow*).

With growing competition for natural resources throughout Thailand the agricultural and settlement frontier is closing up. Those best able to manipulate the vaguaries of the land-titling system to their own advantage are able to claim large tracts of land. The involvement of influential people including politicians, the military, policemen and government officials in abuses of the land system are regularly reported in the Thai press. In many parts of Thailand villagers have uncertain rights to their land, and weak political influence. Villagers in Baan Paa Sombuun are well aware that it would be more or less impossible for them to move to another area and claim land for

themselves. A constant theme that emerged from the first round of interviews was the sense of freedom, independence and self-reliance that the villagers expressed. During the EIA research concerning the construction of the irrigation reservoir in the Phru, the villagers expressed their opposition to the scheme and their determination to sabotage its progress at whatever cost.

There appears to be no real history of co-operative village state relations. Many villagers talked of the strength of the villagers in solving their own problems and developing livelihood strategies little influenced by state extension efforts (eg. the move into fish pond traps). The area of the Phru has some local notoriety for lawlessness; at one time it was notorious as a haven for bandits, and also for communists during the insurgency period. The main contact with government officials that villagers talked of was with the police. This type of contact has continued with the establishment of the non-hunting area around Thale Noi. A common perception expressed in the interviews was that the state only became involved in village life in order to enforce its own authority, or to offer minimal assistance in the case of natural disasters (eg. during the floods of the last two years).

5.vib Baan Glaang Phru

The village of Baan Glaang Phru is situated around two hills (*khuan*) in the heart of the Phru. It is a long-established village with a history of at least two hundred years. There is clear evidence of settlement in the area and local people frequently find old relics such as pottery and swords in the *phru* forests. The village has a temple (*wat*) and junior school with five resident teachers and over 150 pupils. The current official population of the village is 284 households (unofficially it is 315 households), comprising a total of 1730 people. In contrast with Baan Paa Sombuun, the population of Baan Glaang Phru is increasing, and is more constant throughout the year. All newcomers have some kinship connection with existing families. Many local people who have worked outside the village in order to save money and have returned to Baan Glaang Phru in order to build a home and raise a family.

Until 20 or 30 years ago the population of Baan Glaang Phru was less than twenty households. The village was based around the wat and school, and houses were built around the higher ground of the *khuan* with several going deep into the forests of the khuan. Kin settled close together according to land availability, although there is no strict pattern to settlement. Newly weds will sometimes settle close to the husband's family, sometimes close to the wife's family. As village elders say, in former times all villagers were kin in some way. Typically several generations will live close together, in one extended settlement or if land is available, in two or three compounds. Houses of the more established families are added to as the family size increases. Consequently the village can be roughly divided into certain areas of close kin, and also into areas of economic activity and economic status.

The most significant changes in the recent history of Baan Glaang Phru is the construction of roads, the introduction of electricity, and the spraying of DDT to eradicate elephantiasis. All these are seen by villagers as good development that has led to modernisation (*khwam jaroen*) and to an improvement of the general condition of the village. These issues will form the basis of chapter seven.

The population increase of the last decade led to the village deciding to split into two administrative villages (*muubaan*) with two *phuu yai baan* in the final months of the research. It was said that the sheer numbers of households were too great for one *phuu yai baan* to deal with and the village decided to split according to the geographical boundary created by the natural formation of the *khuan*. The split of the village did not affect people's access to natural resources. However, local concern over access to the *phuu yai baan* indicates the importance of access to political arenas and the state.

The high grounds of the *khuan* provide an important resource for the village. The *khuan* and the area around its base is all privately owned. The *khuan* are now almost completely covered in small rubber plantations (*suan yaang paraa*), and rubber has come to be an important cash crop. It is widely regarded as being the basis of economic differentiation in the village. The ground around the foothills of the *khuan* is also high enough to protect it from extensive flooding and is used to grow a variety

of crops as well as rubber, including cashew nuts, bananas, coconuts and more recently water melons. Baan Glaang Phru also has access to large areas of melaleuca forest that is classified as 'reserve forest' (*paa so-nguan*). Some villagers hold forms of title in the *phru* (PT5, PT6) but its legal validity has been brought into doubt. However, some individuals make strong claims to certain areas of the *phru* as hereditary fishing grounds or *grajut* areas. There is also a large area of degraded forest that is now dominated by *grajut*. This area is still classed as 'reserve forest' (*paa so-nguan*) but is managed as a commons with access for all villagers, although some individuals have made their own claims to certain plots. The *phuu yai baan* has tried to limit the size of these 'private' plots to 3 *rai* (cf. Hall 1994) so as to maintain rights of access to all. Although reserve forest areas cannot be owned privately according to the law these areas provide important fishing and *grajut* grounds and access to these are is strictly reserved for villagers. Outsiders have at times been granted access to certain areas, but on the whole, any outside infringement on village forests is firmly dealt with.

Communications in Baan Glaang Phru are far better than Baan Paa Sombuun and facilitate greater market involvement. Dirt roads are passable throughout the year other than for a few weeks during the peak of the rainy season. These roads connect the village to nearby market towns and further afield. The main railway and road to Bangkok is now only a 45 minute drive by motorbike from the village. Nearly all households own a motorbike (as well as a small boat for trips to the *phru*), and several have pick-up trucks. Several villagers offer a motorbike-taxi service. Commuting to work on building sites in nearby towns is now possible on a daily basis. Market traders (*mae khaa*) visit the village everyday to buy fish, *grajut* and rubber. A number of travelling salesmen also regularly visit the village selling anything from fresh produce (including meat and salt-water fish) to household goods (including beds and stereos). There are several small shops in the village, and two noodle restaurants, and two shops with pool tables. Until the last month of the research there was also a garment factory that employed a dozen local girls producing school uniforms that were then sent to be sold in Bangkok. A telephone service is offered in one of the village shops.

On the whole Baan Glaang Phru is perceived by people in both villages to be a wealthier village than Baan Paa Sombuun. Quality of housing is noticeably higher, and nearly all households have a greater number of consumer goods. This can also be related to the advent of electricity in the village so that most households (even the poor) now have refrigerators, TVs and sound systems. and electric fans (cf. Masae 1996). There is an internal market economy that is not evident in Baan Paa Sombuun. Trading is regarded as being the most lucrative activity in the village. Several local people who had previously worked in construction outside the village are now able to find employment for some of the year in the village. There is a very obvious 'boom' in housing in the village. The majority of this comprises returnees who have saved enough to retire to a more subsistence based livelihood in the Phru. Other people are able to earn for some of the year from such activities as building boats and making fish traps (*sai*).

At the same time there is more marked economic differentiation in Baan Glaang Phru. Approximately 25% of households have little or no land (ie. less than 3 *rai*) and much of the land that they do hold is not suitable for agriculture. Lack of access to land is regarded by the *phuu yai baan* as being the main hindrance to reduction of poverty in the village. Although wealthier interviewees dismissed issues of economic differentiation, it is felt acutely by the less well-off. The differences in perspective are significant. On trader commented that the standard of living in Baan Glaang Phru was high, and that this accounted for the high level of drinking in the village. Wealthy respondents said there was no problem of debt (*nii sin*) in the village. However, poorer families estimated that up to 80% of the village was in debt in some form. Since the poorer families tend to be those without land and are therefore ineligible to bank loans the majority of the these debts are owed to local money lenders. As will be seen in later discussions the size and economic differentiation in the village has become a crucial issue in Baan Glaang Phru.

Baan Glaang Phru is more clearly incorporated into the state administrative system and the RDF management structure that covers the Phru. Under the auspices of the Thale Noi Non-hunting Area a substation was established in Baan Glaang Phru in 1986. This provides employment for 13 villagers. Only one of these is a civil servant

(*kharajagaan*) but all receive a monthly salary. The RDF also runs a fire prevention substation in Baan Glaang Phru. This station is open for six or seven months of the drier season and provides employment for another dozen villagers.

In the discourse of 'resource profiles' (Lewis and McGregor 1993) state development initiatives that give political and economic influence to certain groups in a village are important social and political resources. They play a vital role in households' wider resource profiles. *Glum anurak* workers are responsible for catching those responsible for illegal activities in the *phru* and must decide whether or not to hand them over to the police. This puts them in a position of great influence, but can also place them in an uncomfortable position as intermediaries between the state and the villagers. This tension became apparent on two occasions in which the directives of the state conflicted with the interests of close kin in the village. In both cases a compromise that favoured the villagers was reached. It is perhaps inevitable that given the prevalence of kin and patronage networks in rural Thailand (Rigg 1990) the RDF incorporated the village into its management structure through existing power structures in the village. However, the presence of the RDF must be seen as an important political resource in the village. Employment with the RDF is regarded as being a prestigious and reasonably lucrative means of providing employment for local men.

5.viii Summary

The villages of Baan Paa Sombuun and Baan Glaang Phru are less than 10 miles apart but can be seen to be quite different. These differences can be attributed to a combination of environmental and economic factors. The degradation of fishery and forest resources has had a more profound effect on Baan Paa Sombuun, which has no access to cultivable high ground. The history of settlement is also significant. Baan Paa Sombuun is very much a 'frontier community' (cf Hirsch 1990), existing on the environmental and political margins. Baan Paa Sombuun has been excluded from the benefits of development, and is clearly in decline. The dependence on natural resources (as well as seasonal urban migration) is much greater in Baan Paa

Sombuun, and the people are consequently more adversely affected by environmental degradation. Lack of legal title to natural resources that can be utilised limits the efforts of local people to manage their environment. The economy of Baan Paa Sombuun is much more of a subsistence economy. Political capacity is closely linked to the ability of rural communities to manage their resource base (cf. Bebbington 1993). Baan Paa Sombuun is politically marginalised. As the smallest *muubaan* of ten in the *tambon* they have the weakest voice at the local level. Often their village interests are not the same as those of the other nine *muubaan*. There has been very little state involvement in the village, and no NGO involvement.

By contrast Baan Glaang Phru is a growing village (or more accurately, two villages) with significant pockets of wealth. However, there are also significant levels of poverty for at least 25% of the population. Intensified socio-economic stratification can be expected to have further effects on the composition of the village. Environmental degradation of the *phru* has had the greatest effect on the poorer people, while wealthier landowning households have managed to benefit from rubber and fruit cultivation. The siting of the Non-hunting Area substation, as well as the Fire Prevention Unit in the village has created valuable sources of employment and has created an avenue of political representation for some sections of the community. Its long history of settlement and position as tambon centre combine to give the village a higher political profile.

This section has described issues relating to the Phru as a whole and to the two villages that come under this study. There is an ongoing process of negotiation and interpretation of the processes of environmental and economic change both by villagers and outsiders. Indeed, both villages display significant differences from each other. Socio-economic stratification within the villages raises serious doubts about the extent to which they could in fact be termed 'communities'. These issues are central to understanding management intitiatives and the processes of change.

CHAPTER SIX

ADAPTIVE STRATEGIES AND USE OF NATURAL RESOURCES

6.i Introduction

The primary objective of fisheries management is to influence the ways in which people fish in order to attain a balance between fishing effort and the biological capacity of the fishery to replenish itself. In order to do so, it is therefore necessary to determine levels of fishing effort by assessing the numbers of fishers, types of gear employed, and when and where fishing is carried out (cf. MRAG 1994). These issues become more complex in wetland economies in which fishing is only ever one of a range of resource strategies. Entry to the fishery and levels of effort are not constant, and are affected by a range of environmental, seasonal, economic and social variables. It is therefore necessary to place fishing in the context of multiple resource use. This requires an appreciation of the dynamism and diversity of resource use strategies, particularly in the face of rapid rates of environmental and socio-economic change. Change has always been a prominent feature of life in the Phru Khuan Khreng. In McCay's terms, livelihood strategies can be characterised as 'adaptive strategies', with people adapting to a range of environmental and socio-economic variables. As processes of change impinge on life in the Phru, the need to adapt becomes ever greater.

This chapter will place fishing activity in the context of multiple resource use, illustrating local adaptive strategies and diversity of resource profiles. It will begin with a discussion of the features and variables of multiple resource use in the Phru, and the general trends of local resource profiles. It will then proceed with a discussion of the main resource uses, based around a detailed discussion of fishing activity. In doing so it will provide fresh insight into existing research on the Phru and policy recommendations (cf. Heady et al 1995). Drawing on case-studies it will illustrate how and why people fish, and the factors influencing the relative importance of fishing in local resource profiles. The chapter will continue with a case-by-case discussion of the other main resource use activities in the Phru as a means of

assessing the shifting importance of fishing, and local processes of economic stratification.

6.ii Multiple Resource Use in the Phru Khuan Khreng

Multiple resource use is the dominant feature of livelihood strategies in the Phru Khuan Khreng. This is a common feature of wetland economies. A range of resources are available in different regions and at different times of the year, but few resources are available throughout the year. Livelihood strategies have therefore needed to accommodate seasonal change.

Most people living within the Phru Khuan Khreng have the potential of a wide profile of natural resources available to them. Both environmental and socio-economic constraints influence the availability and use of particular resources in the year and at different stages in individuals' and families' lives. For most people a careful juggling act is performed in order to maximise the benefit derived from particular activities within these (and other) external constraints. Different members of the household will contribute in order to optimise the household's collective resource-profiles as far as possible.

Consequently most people and households have 'cast their net' as wide as they are able, without specialising in any one activity. This diversity of activity has led to a great deal of confusion in how outside researchers understand the economic activity of people in the Phru. Economic specialisation is often associated with economic development, and a more economically rational management of resources. The relative lack of specialisation in the Phru has allowed for the types of prejudiced generalisation as appear in the draft of the Taylor and Sons report (see above chapter four) which presents locals as being at the mercy of an inhospitable environment which they are unable to manage to their full economic advantage. Indeed, the multiple livelihood strategies of people in the Phru conflict with the economic rationalisation and specialisation that underpins much state-led development in

Thailand (cf. chapter four), and illustrate the multiplicity of local knowledges and realities.

In attempting to summarise local livelihood strategies, outsiders and government officials refer to fishing and *grajut* as being the main economic activities of people in the Phru (CORIN 1994, Parr 1994). While it is clear that these activities are the most ubiquitous economic activities in the Phru, their relative importance varies enormously from household to household. At the same time, the ways in which people utilise these resources also varies. For example, with greater market involvement in the economies of the Phru there is a greater level of specialisation in different stages of production from extraction to preparation, and finally to marketing. It would be foolish to categorise the *grajut* collector with the *grajut* trader. Equally it would be misleading to categorise the occasional subsistence fisher with the rubber plantation cultivator who fishes with a large number of gill nets during some of the flood season. Clearly the economic benefit derived from these activities together with the perspective gained from such diverse activity is quite different. The overemphasis on fishing and *grajut* to the exclusion of other activities obscures the complexity of life in the Phru and also obscures the ways in which a range of acclivities fit together. This has allowed for many enduring misrepresentations and inappropriate policy recommendations.

The dramatic seasonal changes to the environment of the Phru Khuan Khreng have the most obvious influence on local livelihood strategies. There are three main seasons in the Phru. The dry season from January to April and the rainy season from October to January are the most clearly identifiable and most extreme. There is a shorter rainy season around June or July during which time it may rain regularly and heavily, but without extensive flooding. A number of activities may only be carried out at certain times of the year, according to certain climatic factors. The chart below illustrates the typical seasonal breakdown of activities for inhabitants of the Phru. This chart was compiled from the initial surveys carried out in Baan Glaang Phru and Baan Paa Sombuun. Although there is individual variation of this calendar of activities (most notably because not all of these activities are undertaken by everyone

in the village), the general seasonal trends give an impression of what options are available at certain times of year.

Table 1: Seasonal activities and environmental conditions

Month	*Environmental Conditions*	*Economic Activities*
January	end of rains	fishing in *phru*, *grajut*
February	waters receding	fishing, *grajut*, tapping rubber
March	dry season	tapping rubber, draining refuge traps, *grajut*, migration
April	dry season	tapping rubber, harvest rice, draining refuge traps, *grajut*, migration
May	end of dry season	*grajut* ,migration
June	early rains	*grajut*, fishing for eels
July	water becoming acidic	*grajut*, tapping rubber, fishing for eels (other species low yield)
August	acidic water	tapping rubber, *grajut*, plant rice,
September	acidic water	fishing (eels), *grajut*
October	beginning of rainy season, acidity decreasing	rubber (ending), Fishing improving, *grajut*
November	rainy season	fishing (peak season),
December	rainy /flood season	fishing (peak season)

The above table gives an indication of seasonal trends. Although seasonal change is influential, the following discussion will illustrate that economic activity is not solely determined by seasonal conditions.

The rainy season brings dramatic changes to the landscape and lifestyles of the people of the Phru. It is a time of potential danger to life and property. In the last three years rice crops have been destroyed by severe flooding, and livestock are vulnerable to being swept away. In the low-lying areas of the swamp, such as Baan Paa Sombuun the flood waters of recent years have crept above the height of the house stilts and entered the homes. No loss of life has been reported in recent years from the two villages in which the research was conducted, but the flood season remains a time fraught with danger. The rainy season is also a time when the forests of the *phru* hold an abundance of fish and other animals. This is the main fishing season for the majority of people in the Phru. Although there is fishing activity throughout the year it is largely in the flood season that fishing is carried out for market. Trapping and hunting of forests rats, snakes and other animals escaping the rising waters of the *phru* are important activities, even though nowadays they are of less economic significance. At this time of year all transport is by boat, but periods of heavy rainfall restrict people to their houses. The rubber tapping that is so important in Baan Glaang Phru cannot be continued during this time of year. The heavy rains also tend to restrict construction activity in urban areas, thus denying many people a valuable source of cash income.

The dry season has become a period of relative inactivity. Since rice is only cultivated by a tiny minority of people who have access to high-lying land (most of which is outside both village boundaries and therefore largely only available through kin networks) and who consider the activity to still be economically viable, it is a time in which many people, particularly young men, leave the village for construction sites in surrounding cities. Throughout the year the option of migrating to work in urban areas is open to most households. This is an option that is taken up in any month if, for instance, there are pressing household needs for cash, or if the benefit derived from the above resource uses is insufficient. However, the dryness of the season facilitates the collection of *grajut* from many parts of the Phru. Tapping rubber also requires relative dryness, but cannot be undertaken when the trees lose their leaves at the height o the dry season. This is also a time of year for social activity with religious festivals and a proliferation of weddings. The Thai New Year (*Songkhran*) marks an important time of the year. Traditionally all those from the villages who

work outside return to be with their families. It is also the time of year in which the trap ponds are drained.

The household remains the main social unit, and economic activities are distributed among household members. Within the household, children take on important responsibilities. Tending of animals near the homestead, and subsistence fishing (often using traps, rods and small lift-nets) are typical responsibilities for young children. There is a partial division of labour based on gender which is most significant with regards to *grajut*. The *grajut* industry has become the economic mainstay of the Phru. While collection of *grajut* is largely, although not exclusively carried out by men, weaving is an activity that is undertaken exclusively by women. There is no evidence to suggest that the *phru* is considered to be a male space in any way. There is no prohibition on entering the *phru* but it is difficult and tiring to do so. Many women do enter the *phru*, usually for harvesting refuge traps (*bor lor*), however, it is predominantly men who fish and collect *grajut*. This is explained as being due to other responsibilities for women, and the physical difficulty of working in the *phru*.

That weaving mats is exclusively a female activity has important repercussions. The sale of *grajut* mats is the only dependable source of income for a great many people. In many households the adult men spend long periods of the year working in urban areas. This is particularly true for Baan Paa Sombuun. At these times the villages and the cultural life is dominated by women. Indeed, one interviewee commented that these days it is better for a family to have daughters rather than sons as there is always work for the girls, and the continuity of the village can thus be ensured. If this trend continues, women will play an essential role in maintaining the continuity of the community in the Phru.

This research differs markedly from the majority of works dealing with environmental and socio-economic change in rural Thailand. Most of these works have been in agricultural communities; particularly rice cultivating societies (Tanabe 1994, Hirsch 1990). A theme throughout such writings is the extent to which the nature of the resource (ie. rice) influences patterns of social structure (eg. Tanabe 1994). For

example, much emphasis is placed on the importance of reciprocal and co-operative relations in the pre-development rice economy. While reciprocity and co-operation are a necessary feature of a labour intensive activity such as rice cultivation (particularly in organising planting, harvesting, and irrigation) they do not necessarily enjoy the same central position in wetland economies. These economies have a different relationship with their natural environment. The labour requirements and infrastructure necessary for rice cultivation are largely absent in the wetland environment in which rice was only ever one of many activities. However, an important similarity is the way in which development encourages greater specialisation, and to more intensive utilisation of the resource. In rice economies this is illustrated by the increased use of intensive farming and of inputs such as pesticides and irrigation water. Economic development is also argued to lead to intensified competition over productive resources and labour (Turton 1987). As will be discussed in more detail below, the response in wetlands is significantly different.

Historically the economy of the Phru Khuan Khreng has been based upon the utilisation of natural resources in the forests (*phru*). The scale and harshness of the *phru* did not allow for large scale human management. However it did provide a rich resource base that could be harvested in a manner in tune with the seasonal changes. In the discourse of environmentally aware Thailand, local people refer to this form of resource use as being '*thammachaat*'; ie natural. The meaning and application of this term is still being negotiated, but has now entered the daily discourse of Phru villagers. Its most common usage is to refer to activities that require minimal human intervention. For example the refuge traps (*bor lor plaa* or *bor lor*) are referred to as being '*thammachaat*' (natural) in contrast to the aquaculture ponds which are referred to as *bor liang* (fish ponds for rearing). Honey and *grajut* that have not been cultivated are also referred to as being *thammachaat*. As will be discussed later, this use of *thammachaat* often has very positive connotations and far reaching implications. Until recent times, people could enter the Phru forests and fish, hunt, collect *grajut* and chop trees more or less, as the resources presented themselves. There was no aquaculture, and minimal planting of *grajut* in the Phru Khuan Khreng. The relationship between people and the Phru forests was more akin to that of a hunter-gatherer society than to an agricultural society. Although there has been some

agricultural activity outside of the *phru* forests, utilisation of Phru resources has not required the same degree of human management and intervention as is required for agriculture. In many ways the Phru economy is seen by locals as relying on natural abundance. Older people talked of a time in the village over thirty years ago when fishing could be done by hand. Although most resource use activities are limited by seasonal changes as discussed above, there is not a strict daily timetable of activities within each of the seasons or months. The uncertainty concerning the precise nature of the seasons is certainly a contributory factor. A number of factors may influence any one individual's choice of activities at a particular time. Local people describe their activities, particularly fishing and *grajut* use as '*reey reey*', which in the South can be translated to mean 'as and when'. This is a term that people in the Phru use most frequently to explain the pattern of their activities. As will become more apparent during the course of the following discussion, there are too many variables influencing locals' resource use for them to have any strict pattern. Equally, poor connections to the market have limited the need for accumulation, and most resource use has been for subsistence needs.

6.iii Fishing

Successful management of a fishery depends on knowing who is fishing, and how and when they are fishing. If certain gears, or certain fishing grounds are the domain of particular economic classes of fishers policy targeted at these gears or areas will have a significant distributional effect within the fisher community (cf. Heady et al 1995). Similarly it is important to gain an understanding of how people utilise the fishery in respect to other available resources. If restrictions are placed on the fishery, fishers can be expected to turn to other livelihood strategies, or other means of entering the fishery. Conversely, it is important to understand the position of fishing in commons areas as a subsistence resource when other economic activities are unavailable. The complexity and rapid rates of change in the Phru Khuan Khreng make for an illuminating case-study. The use of several types of gear, the irregular fishing effort of many local people make a fishery such as the Phru complicated to model and manage.

The original ODA fisheries project applied the FAO fisheries model, known as the BEAM 4 (see MRAG 1994, Heady et al 1995). The BEAM 4 is used to 'predict the impacts of a multigear fishery on a multispecies fish stock' (MRAG 1994, p.46). It takes fishing effort and gear selectivity as the 'basic management decision variables which can be altered' (p.46). However, in the case of a fishery such as the Phru Khuan Khreng, collecting data for and modelling the interactions of these variables of effort and gear selectivity present such considerable challenges as to undermine the reliability of such a model. The discussion that follows will illustrate the complexity of the terms 'gear selectivity' and 'fishing effort' when applied to the Phru Khuan Khreng.

Fisheries legislation is poorly enforced in the Phru Khuan Khreng, and management of what is in effect a commons is left to local people themselves (cf. Masae 1996). Official closed fishing seasons are not enforced, and the payment of licences is up to the individual fishers. Illegal practices such as the use of electricity (*chot plaa*) and cyanide (*buea plaa*), as well as 'trawling' of major waterways do occur. Illegal fishing is a highly controversial issue as there is strong evidence that in some cases these illegal activities occur with the sanction of local powers (although not necessarily *phu yai baan*). However, the large area of the Phru Khuan Khreng makes it possible for such fishing to go on undetected. None of the *Pramong Amphur* (DOF District Head) were known in the villages, and although the DOF research station at Lam Pam in Patthalung acknowledged the importance of the Phru fishery, no research or monitoring had been carried out in the Phru.

While it is clearly important to gain a quantitative understanding of these variables, this cannot be achieved without an understanding of the dynamics by which people engage in the fishery. These may indeed undermine the 'scientific' capacity to model a fishery such as the Phru..The existing literature on the Phru fails to breakdown the diversity and dynamism of patterns of fishing activity (see MRAG 1994, Heady et al 1995, Parr 1994, CORIN 1994). It is in response to these shortcomings that the following section is written.

iii.a The fishers

There is a great deal of confusion among policy-makers and researchers as to who is involved in the fishery of the Phru. This is largely attributable to a conceptual and linguistic error, which in turn represents a 'clash of rationalities' between outsider and insider perceptions. Local people in the Phru make a clear distinction between those who fish as a profession (ie. those who '*tham pramong*') as opposed to the vast majority who fish mainly for subsistence (*haa plaa,* or *haa plaa gin aeng*), sometimes selling their surplus. In fact, the terms *tham pramong* (to fish) and *chaow pramong* (fishers) are hardly ever used by local people, except in specific situations when dealing with outsiders. The main distinction that people make is between those who *haa plaa dtalot pii* (go fishing all year) and those who *haa plaa sam-sii duan* (go fishing three or four months ie. in the flood season). Even though the vast majority of people refer to themselves as those who fish in the rainy season, they tend to describe their fishing for subsistence on a *'reey reey'* basis throughout the year. That is, there is no fixed pattern to their fishing activity, but it is carried out as and when it is necessary and/or appropriate.

Many researchers have failed to appreciate the significance of these distinctions, even when aware of their existence. For example, Parr (1994) remarks of data discrepancies from surveys concerning fishing. This is partly attributed to the surveys being carried out by village headmen on behalf of the village. Even so he writes of 'the difficulty village headmen faced in determining which of their villagers were occupied in fishing and whether these activities were full or part-time' (Parr 1994 p.44). Since fishing is not seen as an occupation in the first place, the distinction between part-time and full-time is itself highly misleading. As a result of such conceptual errors it is impossible to assess the true numbers of fishers. Parr concludes that only eleven of the thirty-seven villages surveyed in the Thale Noi Non-hunting Area are 'highly dependent on fishing' (1994 p.45). Neither Baan Glaang Phru nor Baan Paa Sombuun are included in this category. Added to this is the problem of occupational differentiation within the villages. Even if a village is to be categorised as not being highly dependent on fishing it would seem logical to anticipate that a significant proportion within the village may be highly involved in fishing.

The numbers of fisherfolk revealed by such research is far less than the actual number of people who are involved in the fishery. Clearly it is not adequate to attempt to assess the importance of fishing in terms of its position as a primary occupation. As the following discussion will reveal, people in the Phru do not enter the fishery according to the same conceptual logic as many researchers assume. It is this pattern of fishing that this current research will reveal.

iii.b History of the Fishery

It is universally agreed by locals and policy-makers that the fishery of the Phru Khuan Khreng has declined dramatically. For older people, this decline can be traced to the period of the great forest fires of 30 years ago. For younger people, the decline is just as apparent but more recent. For many younger people, the fishery is no longer considered to be economically viable.

The abundant fishery of former times is said to have been one of the main attractions for settlers in the Phru, and in the flood season drew people in from surrounding areas. All local people talk of the perceived decline of the fishery. Older people are able to recall former times in which the rivers, *khlongs* and *phru* were rich in fish all year round. As one older man who had just returned to Baan Glaang Phru after a twenty year absence explained, in former times the rivers were so thick with fish that sophisticated fishing gear was not necessary. It was possible to fish much nearer the homestead with a higher catch. Typical daily catches could be anywhere in the region of between 20 and 30 kgs compared to a typical catch now of between 3 and 5 kgs. A greater number of species were available, including the prized *plaa lampaan* (Nieuhof's walking catfish) which is now popularly believed to be extinct in the Phru.

iii.c The Fish

Peat swamp and melaleuca forests such as the Phru are increasingly being recognised as important habitats for several species of fish (eg. Scott 1989, Maltby 1992).

Recent studies suggest that there are at least 26 species of fish to be found in the Phru Khuan Khreng (Masae & McGregor 1996, MRAG 1994, CORIN 1994). Not all of these species are fished commercially. The main species to be fished commercially are snakeheads (*plaa chon*), catfish (*plaa duk*) and featherbacks (*plaa chalaat*), perch (*plaa mor*) and swamp eels (*plaa lai*). The most prized species are snakeheads, catfish and eels. Of these snakehead and catfish comprise the main catch for the majority of people, and are caught all year round. Both snakehead and catfish can be caught using the same fishing gear, whereas eels require specialist traps. These are closely followed in economic importance by featherbacks. The most commonly identified commercial species are summarised as follows:

Table 2: Commercially Caught Fish in Phru Khuan Khreng

Local Thai Name	**Common English Name**	**Latin Name**
plaa chon	common snakehead	Channa striatus
plaa chon chai	unknown	Unknown
plaa chado	giant snakehead	Channa micropeltes
plaa duk	catfish	
plaa duk nuea orn (plaa duk uui)	Gunther's walking catfish	Clarias macrocephalus
Plaa duk daeng	Batrachian walking catfish	Clarias batrachus
Plaa mor	common climbing perch	Anabas testudineus
plaa gradii	moonlight gourami	Trichogaster microlepis
plaa salid	Snake-skin gourami	Trichogaster pectoralis
plaa chalaat	grey featherback	Notopterus notopterus
plaa lai	swamp eel	Fluta alba
plaa iisaab, plaa gradii mor	three-spot gourami	Trichogaster trichopterus

(cf. Masae & McGregor 1996)

For fisheries biologists, the Phru can be characterised as a floodplain fishery (MRAG 1994). Floodplain fisheries display features that distinguish them from reservoir fisheries due to their seasonal rather than permanent inundation. The general features

of floodplains that determine the nature of the fishery are the changing levels of water, the changing directions of water flow, and the fluctuating acidity levels. The seasonal change of water levels in floodplain wetlands supports a diversity of fish species that cope with the changes in different ways. It is unclear to what extent fish in the Phru endure the conditions of the Phru, or to what extent they depend on these changes. Fish cope with the changing water levels in two ways; by retreating to the ditches of the *phru* when water levels recede in the dry season, or by joining the inundated Phru from the permanent reservoir of Thale Noi. For the main species of fish that are able to endure the dry, acidic conditions, the ditches and forests of the Phru provide a refuge in the dry season. MRAG (1994) distinguish between two classes of fish to be found in floodplain fisheries; whitefish and blackfish. The most prized fish in Phru Khuan Khreng are blackfish (eg. snakeheads and catfish). Blackfish are all to some extent air-breathing, and are able to endure the low water levels of the dry season. They are able to burrow themselves in the mud and still breathe air. Indeed they depend upon the seasonal variation of water levels, and take refuge in the heart of the Phru in the dry season. Whitefish are defined as 'rheophilic', flowing-water fishes, intolerant of severe dry season conditions, emigrate from the floodplain back to the river' (MRAG 1994 p.15). Although the majority of fish species are whitefish, the majority of fish caught are blackfish (MRAG 1994).

The fluctuating population levels of floodplain fish and their dependence on fluctuating water levels, leads the fishery to be vulnerable to seasonal over exploitation that may have a damaging effect on the brood stock (MRAG 1994). If the dry season reserves, migration routes and brood stock are targeted by fishers, fish stocks might be expected to fall. Equally, if fish are caught before maturation, or when carrying eggs a similar result might also be expected. The capacity of floodplain fisheries' populations to proliferate suddenly in the peak rains after having dropped to low numbers, makes it very difficult to predict what population levels are dangerously low, and what level of effort could be referred to as representing a 'maximum sustainable yield'.

The extent to which fish depend upon or merely cope with the changing water levels between the dry and rainy season is an important issue. Large-scale management

plans such as the proposed RID irrigation project are being sold to the local people as projects that will create permanent standing waters and will therefore increase fish populations. The behaviour of the main species of fish suggests that if this is so, the species composition will change markedly.

Local knowledge regarding the fishery suggests that the most important environmental variables in fishing conditions are water acidity, water levels and water flow. It is recognised that fish cannot survive in highly acidic water. This water is referred to as '*nam breow*' (acidic, literally bitter water). This is believed to have been caused by several inter-related processes beginning with the great fires of thirty years ago. The resulting acidity was intensified by deforestation and siltation from surrounding areas, and poor drainage from the Phru. This is believed to have led to stagnant water, and to near complete drying out of the *phru* in the dry season. Poorly flowing water is believed to lead to increased acidity but also to the water becoming stagnant (*nam boey*). When low-level water becomes trapped in the Phru vegetable matter is broken down so that fish are unable to survive. If caught in such stagnant conditions the fish are liable to be rotten and are inedible.

Knowledge of the migration and breeding patterns of the fish is also an important factor in fishing strategies in the Phru. There are two popular local explanations for how fish migrate around the dry season. These explanations are not mutually exclusive. For some, fish are believed to retreat to Thale Noi with the receding waters, and to return to the *phru* with the floods. For others fish are said to retreat to the Phru in the dry season in order to settle in the many ditches and pits in the *phru* which hold water throughout the year. It is in these recesses in the *phru* that fish breed and spawn, and also where local dig the refuge traps (*bor lor*).

Within those areas conditions can vary markedly. Some areas may only be acidic for certain times of the year. During the dry season, the *phru* tends to be more acidic than the *khlongs* as the water level is lower and it contains more vegetation and sedimentation. This is widely reported to be a more recent phenomenon. However, there is still significant localised and seasonal variation of levels of acidity.

iii.d Fishing Effort

The restriction on certain types of fishing gear is one of the main methods adopted by locals and policy-makers in controlling the level of fishing effort (see MRAG 1994, Heady et al 1995). Fisheries policy also targets the types of gear that are used. Gear used in freshwater fishing must fit legal criteria (eg. in terms of mesh size for nets) or requires payment of a licence fee (see Masae 1996). Only gear that is considered as that used by 'professional fishers' require such licences. Local DOF officials do not collect licence fees in the Phru and do not actively enforce mesh size restrictions although there are strong local level sanctions which apply to mesh size. It is universally appreciated within the Phru that use of a small-mesh size increases the overall catch by taking immature fish that have not yet bred. This is considered to have a deleterious effect on the brood stock (*mae phan*). Interestingly, the only gear that requires a licence is the cast net (*hae*); a gear which local people consider to be for occasional subsistence fishers only. The main gears used in the Phru (gill nets, traps) are not subject to payment of a licence fee. It should be noted that there is a great deal of inconsistency with regards to fishing legislation. District Officers' explanations of fisheries legislation, particularly with regards to gear types does not always coincide with National policy.

Fishing gear is used in various combinations in the Phru. Some of these gears are used to catch specific species of fish (eg. eel traps, shrimp nets) but most are used according to a combination of a number of factors, such as seasonal and environmental conditions, cost of gear, or the skill and preference of particular fishermen. However, it has been argued that use of specific types of gear is determined largely by economic status of fishers (Heady et al 1995), or by territory fished (CORIN 1994).

The fishery of Thale Noi is markedly different from that of the Phru. In the case of Thale Noi, permanent inundation of the lake, and less access to productive land make fishing a primary source of income, with less alternative livelihood strategies. Gear is employed that is more suited to the more or less constant water levels in the lake. The clearly marked boundaries of the lake and relatively large population of fishers

create a situation n which fishing territory is more clearly claimed than in the Phru. Choice of gear, particularly between traps and gill nets, appears to be more closely related to cost, economic status of the fishers, and access to fishing grounds that favour one type of gear over the other. It is therefore more possible to assess catch for each gear type, and then draw conclusions about the distributional effects of restrictions on specific gear types on the economic class of fisher that uses that specific type of gear.

In the case of Thale Noi, Heady et al (1995) assess types and volume of catch according to particular gear used. They argue that in Thale Noi, specific gear tends to be used by specific economic classes. In short they argue that traps (*sai*) are used by wealthier fishers, whereas gill nets (*gat*) are used by poorer fishers. They then model the biological and economic effects of restrictions on either traps or gill nets. Traps which catch mature fish are biologically more sustainable, but the use of gill nets by poor fishers is of more benefit in terms of poverty alleviation. This allows them to conclude for example, that a restriction on a certain gear will lead to a percentage reduction in volume caught, and a percentage reduction in income. While this correlation between economic class and gear employed may hold for Thale Noi in which their research is primarily based, it certainly does not hold for the Phru. As will be discussed in greater detail below, the variables influencing individual fisher's choice of gear are more complex. If policy is to be targeted at fishing gear, and certain types of gear are to be restricted it is important to appreciate who is using what type of gear and what the effects of legal restrictions are likely to be.

A number of terms are used for fishing. Generally people refer to fishing as *haa plaa.* This can be translated literally to mean 'to look for fish'. Similar phrases are used for finding or earning a living (literally *'haa gin'*, looking for food) or for looking for work, *haa ngaan tham.* The term *haa plaa* implies a degree of uncertainty, and is used particularly for fishing with a *sai, gat* or *bet.* However, in the case of *gat* the term *loy gat,* literally float a *gat,* is also used to describe the mechanics of fishing with a gill net. The term, *jap plaa* is also used when talking about catching fish in *sai.* When referring to the *bor lor plaa* both *jap plaa* and *dtok plaa* are used. Fishing in the *bor lor plaa* is in a confined space and requires catching the fish by hand, or with

small nets. This often occurs in the *bor lor plaa* when fish are scooped up in nets or by hand as the waters are pumped out. Otherwise fish are grabbed in the hand (*jap plaa*) as they struggle to escape.

In the Phru Khuan Khreng the main gears used are gill nets (*gat*), traps (*sai*), hooks (*bet*), and eel traps (*laen).* The choice and method of use of fishing gear reveals the decision making process of fishers and their understanding of the way the fishery works (cf. Pornchai 1989). These gear types will be summarised below.

- *Gat* (Gill net)

Fishing with a gill-net is referred to as '*loy gat*' (literally 'floating a gill net'), and they are used mostly during the periods of flooding. The water must be a certain depth so that the *gat* may float without being trapped in vegetation, and to allow easy collection of the net in the morning. *Gat* have a width of between 12 and 18 inches, and a length up to 50m. Typical mesh size is between 4.5cm and 5.5cm, significantly higher than the legal minimum of 3.5cm. Even in the peak fishing season it is common not to catch a fish, or only a few, per net. Some fishermen therefore cast as many as 50 nets, covering a huge area and taking up to three hours to put out. The determining factors for a good catch are considered to be the area in which they are placed and some luck. *Gat* are placed along the edges of canal banks (*khlongs*) and around clusters of melaleuca to catch the fish as they move out during the night to feed. *Gat* are the gear that catch the most fish but with two serious disadvantages. The overwhelming majority of fish it traps are killed when caught and therefore fetch a lower price. In the rainy season however the large number caught usually offsets the lower price. Drying and fermenting of fish fetches a higher price for dead fish but can not be done easily during periods of rain.

In general *gat* can only successfully be used in the Phru for three months a year and may only last for three or four seasons. The price of *gat* at over 100 Baht per net is prohibitive for many fishermen who tend to opt for traps (*sai*) which can be used more easily throughout the year.

Gat are used with a number of mesh sizes that affect the size of fish caught. The size of mesh is a means of regulating fishing effort for the DOF as well as for local people. The smallest mesh size recorded was 3.5cm. Such a low mesh size catches large volumes of low-value small species such as *plaa mor*. A more common mesh size is in the range of 4.5cm to 5.5cm. Using this size mesh fishers can catch much larger, more valuable specimens of species such as *plaa chon* and *plaa duk*.

- *Sai* (Trap)

The trap that is used throughout the Phru is known as '*sai*'. *Sai* are bulging traps made of a locally growing form of rattan and old trawl nets. Although difficult to make many fishermen make *sai* themselves for a price of 5 Baht (ie. the price of netting as rattan can be collected for free). Some fishers are known to be make good quality *sai* and are able to sell them as a sideline for 50 Baht each. *Sai* can be used all year round, even in periods of low water. They are placed along natural or man-made barriers such as canal banks or fence barriers that fishers build themselves and which also act as boundaries stakes for fishing grounds. Rarely catching more than one fish per trap they are used in high numbers. The fish are usually caught alive and often the larger, more valuable species such as snakehead (*plaa chon*) and catfish (*plaa duk*). More serious fishers keep their traps in the same grounds and check them every morning. Others keep *sai* in *khlongs* and waterways near the house, checking them every now and then.

- *Bet* (Hook and Line)

Together with *gat* and *sai*, hooks on short bamboo poles (*bet*) are the most popular gear. Cheap and easy to make they tend to catch live, large size fish, particularly snakehead and catfish. The bamboo poles are placed into the ground around clusters of vegetation. The hooks which are attached to the short poles by a short length of cotton, are baited with small pieces of fresh water snail. Several hundred may be placed out in the late afternoon and collected in the mornings. They are used in

periods when water levels and numbers of fish are considered to be high enough, but stable. However, skill is considered to be more of a factor than with other gears and all but the dedicated avoid large-scale use. The time taken to set large numbers of *bet* acts as a strong disincentive to their use.

The other gears are species specific; shrimp nets and eel traps (*laen*). Eels are relatively abundant and valuable species, and are a popular delicacy in the South. However, they are only found in certain parts of the Phru and are considered to require more skill and knowledge for successful capture. Only one person in Baan Paa Sombuun catches eels. He said that no-one else was taught by their fathers how to catch them. Several people, both 'professional' and 'amateur' fishermen in Baan Glaang Phru were considered to be expert eel catchers. Eels can only be caught for six months a year. However, much of the eel season coincides with the period when catches of other species (viz. snakehead and catfish) are low. The price of eels is high, fluctuating between 40 and 60 Baht/kg.

Other gears are also used. Seine nets (*uwan*) can only be used in *khlongs* and during times of high water levels. Reported use of *uwan* was very rare. Shrimp nets are used, particularly in Baan Paa Sombuun, by old women and children along the *khlongs* in front of their houses. The decline in numbers of shrimp has led many fishers to give up on this activity.

- *Bor Lor*

A recent innovation that has a great bearing on this research is the refuge trap or '*bor lor plaa*'. This is a form of catching fish that is widespread throughout Thailand and South East Asia (Sollows et al 1991, Durno 1989). People in the Phru do not refer to the use of *bor lor* in the same way as the above mentioned fishing techniques. In initial interviews when asked about fishing (*haa plaa*) the discussion centred around the use of the above mentioned fishing gear. Use of *bor lor* was referred to quite separately, usually in terms of digging the trap (*khut bor lor*) or in terms of catching the fish in the drained pond (*jap plaa*). Those who identified themselves as fishers do

not always use *bor lor*, while those who do use *bor lor* are not always fishers. This can partly be explained as a result of economic status, as the use of *bor lor* increasingly requires significant cash investment.

The principle of *bor lor* is straightforward. A pond is dug in low-lying land that is inundated with water during the floods. Fish enter the pond with the flood waters and become trapped as the waters recede. The fish are given time to reach maturation and are then harvested in the dry season. Such refuge traps can be found on the edges of paddy fields, along the edges of *khlongs* and in the heart of the *phru*. Yields can be in the region of 50 kg with a mixture of species, and many villagers own several ponds; in some cases over thirty.

The growing prevalence of *bor lor plaa* is attributed to the overall decline of the fishery. It is an extremely efficient method of catching fish and is of great commercial value in the dry season. During the period in which the *bor lor plaa* are harvested market traders from Thale Noi or Cha-uat come to the villages every evening. It is a method of fishing that has been made more efficient and widespread as a result of technical innovation with the introduction of mechanical diggers (*macro*) to dig ponds in previously inaccessible areas. *Macros* are able to dig larger deeper ponds far more easily than they could be dug by hand. Harvesting of the ponds has been facilitated by the use of mechanical pumps (*khruang sup*) that are powered by outboard motors. *Macro* and *khruang sup* are not available to all villagers. Many villagers are unable to afford the 1200 Baht daily fee for *macro* hire. Digging a *bor lor* by hand can take several people upwards of five days. The walls of hand-dug ponds tend to be less secure, and they therefore survive for a shorter time. Access to a *khruang sup* is less problematic as they can be found for hire in both villages. However, if a *khruang sup* is not available when the *bor lor plaa* owner wishes to harvest, he may be compelled to sell the fish harvest to another villager. The typical price is approximately a quarter of the estimated value of the pond. However, in most cases harvesting is done by extended families and neighbours in a reciprocal arrangement. Young and old participate and the harvest is frequently accompanied by feasting and drinking.

Legislation regarding pond traps draws a distinction between ponds that are dug on private land behind a house (*bor dak*), and those that are dug next to *khlongs* or in common land (*bor lor*). *Bor lor plaa* such as are used in the *paa so-nguwan* of the Phru Khuan Khreng are technically illegal. The DOF and RDF are aware of this but are reluctant to act against the practice. It is believed by many of these government officials, as well as many fishers in Thale Noi and many in the Phru villages themselves, that the use of *bor lor plaa* is having a serious effect on the fishery. This will be discussed in more detail in chapter six.

The range of gear used in the Phru Khuan Khreng and the erratic pattern of fishing makes the modelling of interaction of fishers and fish highly problematic. This has ramifications if policy is to be based upon models of catch per unit effort, or if distributional issues are to be central features of policy. A range of gear and methods of fishing adopted in response to a number of external variables indicates a high level of adaptive strategies in local fishing practice (cf. McCay 1978). In terms of knowledge issues, the diversity of fishing practice clearly represents a diversity of interests and perspectives, or as Chambers (1997) might express it, a multiplicity of realities. There is no single explanation for gear choice or fishing effort.

6.iiie Marketing

Both villages in the Phru are well known as sources of prized species of fish, particularly snakehead (*plaa chon*), catfish (*plaa duk*), and eels (*plaa lai*). Improved road communications in Baan Glaang Phru allow a number of market traders (*mae khaa*) from within the village or from outside, to travel on an almost daily basis. There are also a number of traders who either specialise in fish (approximately three in Baan Glaang Phru) or trade fish as one of a number of commodities. Several of these traders specialise in fish for the brief peak season, mainly trading with neighbours and kin. Travelling around the village they purchase the fish on an informal basis, as and when (*reey reey*) they are available. Baan Paa Sombuun is more isolated for all but the dry season. Groups of households and kin at other times of the year will take collective catch to the nearby village of Thale Noi. During the

dry season, the large daily catch from the trap ponds draws a number of *mae khaa* to both villages.

Prices between the villages are more or less constant. The main factors influencing price are size, and whether the fish is dead or alive. Large, live fish fetch the highest price. The most valuable species are *plaa chon*, *plaa duk* and *plaa lai*.

6.iiif Case studies of Phru fishers

There are many factors influencing the choice of gear, including; the cost of gear, value of fish caught with that gear, water level of fishing site, familiarity and skill. For example, one person tends to use *gat* (gill nets) and *sai* (traps) for the whole year. In the drier periods he places *gat* in the small *khlong* near his house, and places *sai* in the *phru*. Although the cost of fishing gear is an important consideration, it is not the only determinant of gear used. The economic status of particular fishers using a specific gear is not always clear.

The method of fishing that local people adopt in the Phru is influenced by a number of environmental changes (water level and acidity) and an understanding of the ways in which fish behave. While there is a great deal of consensus concerning general optimum conditions for fishing, there is ongoing discussion in which new evidence of fishing conditions and strategies is presented daily. It is acknowledged that individual skill is an important variable. In each village individuals were singled out by other villagers and identified as being particularly skilled. Such fishing skills could be attributed to any of a number of factors; having been well taught by a father, having skill in making traps (*sai*), knowing and having access to the best fishing sites and conditions, knowing the forests. Others who occasionally took home a large catch were identified as merely being lucky, but not having true ability. Many of those who have moved out of fishing cited their relative lack of skill as being a contributory factor made all the more important by the perceived decline of the fishery.

The combination of these variables can be further revealed by reference to the following case-studies.

Case study 1: Nat

The first case study is of one of the few remaining 'professional' fishers in Baan Glaang Phru. He is well-known within the village as being particularly skilled, and is much younger than most other regular fishers.

> Nat is 25 years old and a native of Baan Glaang Phru. His family has been in the village for several generations but is of middle income range. He was married four years ago to a woman from Thale Noi and both have settled in Baan Glaang Phru with their three year old son. The couple have settled on land owned by Nat's parents and live in an extended compound with his parents and an aunt and uncle. Across the road is another large complex in which other close kin live. Nat is in the process of building a new wooden house for his family. At the moment, his family live in a basic wooden hut, and have to share washing and toilet facilities with his parents. He holds no land of his own.
>
> Nat is one of the few 'professional' fishers, and is well-known in the village as a skilful fisher. Nat attributes his skill to his father's teaching and experience as a child assisting his father on fishing trips. He has specialised in fishing, and is regarded as a very skilled eel (*plaa lai*) catcher. Even though he knows that collecting *grajut* can generate a higher daily income he considers it to be too difficult, and enjoys the challenge of fishing. He buys *grajut* from kin and neighbours in Baan Glaang Phru and his wife makes mats. Nat is one of the very rare men who sometimes assists his wife in mat making. Having come from Thale Noi, his wife is skilled at making the more complex designs of mat. They can produce two or three every day which can provide an income of 70 to 100 Baht per day.

Nat is able to support himself from fishing throughout the year except for June and July when he has at times gone to work in construction. As he puts it, "If there is no food in the house there is no choice but to go to Hat Yai to work in construction". Usually this is only for one month. However, he hopes that he will no longer have to leave the village to find employment.

Nat goes fishing practically every day of the year, for four or five hours a day. He uses a range of gear throughout the year, particularly traps (*sai*), hooks and lines (*bet*), and in periods of high water, gill nets (*gat*). At peak times of the year he also goes fishing at night using a spear (*jamuak*). His choice of gear type is partly determined by seasonal fluctuations of water levels but also by his own belief that in order to trick the fish it is necessary to vary the gear used, and the grounds in which they are used. This is a factor of increasing significance as the fishery declines. However, in order to be able to do so requires a degree of specialisation that most are unwilling, or unable to adopt. That Nat is able to do so is in his own words attributed to his wife's ability to weave high-value mats, as well as to the presence of his extended family and his own youth. Although only willing to do so as a last resort, he is confident that if there were an urgent need for cash in the household he would be able to find employment on construction sites in Hat Yai.

He owns a small boat with an engine and is able to go deep into the forest and thus vary the fishing grounds he uses. Since many of the older members of his extended family no longer fish to such levels of intensity, Nat is also able to use their traditional grounds. He estimates that a typical daily catch is between 2 and 3 kg, compared to a minimum of 7 kg ten years ago. Most of the catch comprises the main commercial species of snakehead (*plaa chon*) and catfish (*plaa duk*). But as with most other fishers in Baan Glaang Phru, significant numbers of featherback (*plaa chalart*) and *plaa mor* are also caught.

During the peak of the fishing season in December he expects to catch between 20 and 30 kg, decreasing to 5 - 10 kg in January. By August the daily catch is only sufficient for domestic consumption, but by September the availability of a daily catch of 5 - 6 kg of eels (*plaa lai*) is enough for him to earn a cash income. Catching eels requires specialist knowledge and only a small proportion of fishers in Baan Glaang Phru consider it to be a worthwhile activity.

During the dry season (March and April) he harvests the three refuge traps that he owns. These were dug over ten years ago in the *phru*, and yield a minimum of 20 kg per pond at an estimated value of 1500 Baht. Since he does not own a pump (*khruang sup*) he has to rent one from a friend at a rate of 300 Baht per pond. He consider the refuge traps a useful method of catching fish in the dry season and hopes to dig more ponds but is prevented from doing so by the cost of hiring a *macro*. However, he is also aware that if the use of *bor lor* spreads too widely among villagers it is likely to have a deleterious effect on the brood stock. He does not consider *bor lor* to require the same level of skill as required for other fishing techniques.

The case study of Nat is unusual even for Baan Glaang Phru. Most men of his generation have moved into other economic activities or have otherwise moved away from the village altogether. However, like many others Nat has a particular attachment to a rural life-style and has the family and emotional ties to the village to remain. Having experienced life on a construction site he is aware of the limitations of an urban life-style. He is not as attracted by material goods and the need for a cash income as many of his contemporaries. Unlike many of these contemporaries who have recently returned from extended periods in the city, Nat has spent many years acquiring the skill and knowledge which he and other believe to be necessary for success in fishing. In his own words fishing is an activity that he is good at, and from which he gains considerable satisfaction. He believes he is fortunate that he does not have to work too hard or for too long.

Most others who continue to fish do not do so with such confidence or enthusiasm as Nat. Two more case-studies will reveal some of the challenges that are more commonly felt by other fishers.

Case study 2: Chuan

The case of Chuan is in stark contrast to that of Nat. Chuan is seventy-five and has lived in Baan Glaang Phru for over fifty years having moved from Ranot to marry a local woman. At that time the fishery was one of the main attractions to outside settlers, and required less effort for far greater reward. As far as he is concerned the fishery has completely collapsed (*plaa met leow* in Southern Thai), largely as a result of forest fires but also because of the greater numbers of people fishing. Thirty years ago he could catch fish throughout the year but is now restricted to the rainy season. However, he still fishes casually for domestic consumption throughout the year. As with most low-income occasional fishers his gear of choice is the sai trap. He is able to reduce his work load by leaving them in the same position for most of the time, merely inspecting the sai every morning. This allows him more time to collect *grajut*, tend to his small patch of rubber and to tend to his small fruit and vegetable garden. He also collects wild honey and red ants eggs, a local delicacy, when available.

His selection of gear illustrates a growing trend in the village. Although he has a collection of *sai*, *bet* and *gat* his gear of choice these days is *sai*. Despite the lower yield, the fish that are caught tend to be high value species that are caught alive. Whereas *gat* can only be used in times of high water which he regards to be less frequent than previously, the *sai* can be used throughout the year, and with far less effort. As the fishery has declined a greater number of *gat* are now needed. This involves longer periods placing and collecting them, which can conflict with other more reliable and lucrative activities.

The relatively high cost of *gat* together with the lower yields, their short life-span and need for greater numbers no longer make them so worthwhile. It is significant to note that when he first arrived in the village Chuan was able to fish using the sum trap. This is a very simple form of gear that is only worth using when there are large numbers of fish. It was also a time when the forests were dense, the waters less acidic and the phru still held deep water in the dry seasons.

Case study 3: Lek

The case of Lek also illustrates the general trend away from the fishery, except for consumption. Lek is 41 and also moved to Baan Glaang Phru in order to marry and settle down. Previously he fished throughout the year for market but now considers the income from fishing to be inadequate (*radai mai por*). He no longer fishes everyday, but still considers fishing to be important for domestic consumption. This is partly because of the decline in yields but also because of the growing importance of *grajut*. Lek's household clearly illustrates the growing economic importance of women in the village. He has three unmarried daughters who still live at home. This allows him to concentrate on collecting *grajut*, while his wife and daughters weave mats. Between them they are able to earn a far higher income than he could earn on his own from fishing. He also spends up to six months labouring on construction sites, and his planted four *rai* of rubber that is due to reach maturation this year.

Fishing now has to be fitted in with other activities. When he does fish he goes into the *phru* and uses a combination of *bet* and *gat*. This is normally in the flood season when yields are highest. It is also the time when construction, and when drying *grajut* are not possible. As such fishing remains an important source of protein throughout the year, as well as an important source of cash income at a time when few other

> options are open. Like many villagers, particularly those without access to land fishing is the main activity that allows them to reside and earn a cash income in the village during the rainy season. The length of time required for fishing has increased with fishing trips taking up to seven hours with a typical catch of between 4 and 5 kg. While fishing is a necessary component of a wide household resource profile, his main sources of income now are from labouring and from *grajut*. In the future he hopes that rubber will allow him to spend longer periods in the village with his family. He also realises that if his daughters marry ad move away from the village, *grajut* will be a far less lucrative venture.

All the above case studies illustrate the shifting importance of fishing in local resource profiles. Fishers such as Nat are increasingly rare in the villages, particularly in Baan Glaang Phru where alternative resources are available. However, there are still a large number of people who do not have access to local productive resources. Many of the men who have abandoned fishing in favour of construction work do so at the whim of a boom economy that is beyond their control. The economic crisis of 1997 has hit the building industry especially hard and will inevitably drive people back to the villages. In such a scenario access to the 'commons' resources of the Phru will form an essential source of income. Indeed, the economy of the Phru is now precariously dependent on vulnerable external markets, while subsistence resources such as the fishery appear to be seriously degraded.

The above discussion also illustrates that the Phru fishery is complex, and significantly different from permanently inundated fisheries such as Thale Noi. Fishing effort is not as constant as in Thale Noi and a number of variables influence the extent to which people become involved in the fishery, and the ways in which they utilise the fishery. This clearly presents theoretical and practical challenges to the application of such a model as the BEAM 4 (see MRAG 1994). Fishing is one of a number of resource activities. It is clear that local fishing activity is adapted to a combination of environmental and socio-economic variables. Adaptation to changing environmental variables is evidenced in a number of instances. Most clearly it can be

seen in the adoption of gear types that require less human effort and that select higher value species and specimens. This is an important point as it is often assumed that rural people will pursue their own individual economic interests at the expense of overall sustainability. There is no evidence to suggest, for example, that the decline in yields has led people to use smaller mesh sizes. Indeed it is widely believed that to do so would have a deleterious effect on the fishery. That local fishers do not do so has less to do with state legislation as might be expected. Rather it seems to be the result of local community sanctions, and to market influences. Applying the model of a people-centred ecology presented in the introductory chapter, it is the interplay of market and community rather than of the state that is of greatest significance in this instance.

Individual fishers' decisions concerning fishing practice are varied and complex representing a multiplicity of knowledges. This I more evident in the case of the Phru Khuan Khreng than in Thale Noi. The use of particular gear in the Phru is not solely influenced by issues relating to economic class. Where class does come into play it is almost the mirror of the situation in Thale Noi (cf. Heady et al 1995). The use of *gat* in the Phru is becoming increasingly costly and less effective. This is for a number of reasons. *Gat* can only be used in the Phru during the periods of high flood waters which is not an issue in Thale Noi as the lake is permanently inundated. With the decline in yields a greater number of *gat* must be used in the Phru, but still for only three months a year, and still with a relatively short life span. On the other hand, *sai* can be made or bought locally and cheaply, and can be used to catch high value species and specimens throughout the year. Even though the yields are low, their use requires less time and conflicts less with other livelihood strategies. However there is still a great deal of diversity in the selection of gear types. It also appears that the most successful fishers are those who are able to utilise a range of gears and fishing grounds and who are able to adapt their fishing practice to changing conditions.

As the natural abundance of the Phru fishery declines there is evidence of more direct human intervention. This is most clearly seen in the uptake of the *bor lor*. However, non-environmental variables also influence this recent trend. The relative inactivity of the dry season as a result of the collapse of rice cultivation make the *bor lor* a more

attractive proposition. As supply is relatively low, prices remain high. The technological innovation of *khruang sup* and macro has also boosted yields and made *bor lor* more economically viable. Yet the *bor lor* is not seen as a form of fishing in the same terms as more traditional methods. Since it requires access to land, *macro* and a *khruang sup* it is not an option that is open to all. In contrast fishing has traditionally been an open access resource that has not until recently depended on access to costly and sophisticated gear.

Fishing remains one of a number of resource uses in the Phru Khuan Khreng. The decline of the fishery has far reaching implications. That most people in the Phru have been able to endure the decline of the fishery is largely due to the emergence of other economic activities. However, these are activities that are vulnerable to the vagaries of external markets. This is most evident in the case of migration, but it would seem reasonable to assume it to be true for *grajut* and for rubber production. Fishing has held a unique position in local resource profiles. It provides a basic source of protein in local diets, and as a commons resource, provides a safety-net for the most vulnerable. It is in this context that the decline of the fishery should be assessed. The environmental implications of a declining fishery must also be considered. At this point it is important to state that a collapse of the fishery would seem to indicate a wider potential environmental collapse. These issues will be dealt with more thoroughly in the following chapter.

The following sections will place fishing in context of other resource uses. It must be borne in mind throughout the following discussion that the majority of households combine a number of resource uses (in some cases all of the following resources are utilised within the household). In order to better manage the fishery it is necessary to be aware of the shifting significance of fishing activity. Even though fishing is the main focus of this thesis, it is essential to assess the dynamics of multiple resource use in the Phru.

6.iv *Grajut*

The cultivation, collection and sale of *grajut* together with the making of mats is the mainstay of the cash economy in both Baan Paa Sombuun and Baan Glaang Phru. For nearly all households in both villages *grajut* provides at the very minimum a cash income of 35 Baht per day. For other villagers engaged in the production of high quality mats or in the trade of raw *grajut* or mats, it provides a reliable and potentially lucrative source of income.

Grajut is a sedge grass that grows in seasonally inundated areas. It is able to withstand the highly acidic conditions of the Phru and there is no strong evidence to suggest that *grajut* prefers less acidic conditions. The height of the *grajut* is determined by the water levels; when the water is deep the *grajut* grows higher. *Grajut* can be found in patches within the *phru*, apparently growing in some symbiotic relationship with the melaleuca. *Grajut* is also found in degraded forest areas. Although *grajut* can be found in many areas within and around the Phru Khuan Khreng, the low-lying areas of the reserve forest around Baan Glaang Phru have the highest concentration. As a result, Baan Glaang Phru has become an important source of raw *grajut* for the growing mat-making industry around the Thale Noi-Phru Khuan Khreng region.

The collection of *grajut*, particularly from the dense *phru* is known locally to be an arduous task. The clusters of *grajut* are usually pulled by hand in a twisting motion. This is referred to as '*torn grajut*', literally to pull up the *grajut*. An alternative method involves the cutting of *grajut* using a rice scythe. In order to ensure a crop for the following year *grajut* must be pulled in such a way that the roots are left in the soil. Pulling by hand is the most widely preferred method but leaves the hands of the collectors badly cut. The hands and feet of those who have been involved in *grajut* for many years are tough and leathery. Many of these older people are in considerable discomfort from years of such a life. The use of a scythe is less prevalent although it appears to be increasing among younger people. Although easier on the hands, it is believed that it is more difficult to avoid pulling up the roots.

A recent innovation has been the cultivation of *grajut* patches. This is more common in Baan Paa Sombuun as there is far less *grajut* available naturally. The *grajut* is reported to grow easily and relatively small areas of land are considered viable. It is widely believed that wild *grajut* (*'grajut thammachaat'*) is less available as the number of people collecting it has increased. However, Parr (1994) also argues that the increased area of cultivated *grajut* threatens the habitats of waterbirds for which the Thale Noi Non-hunting Area was established. However there is no indication that the local RDF officials are prepared to act against an activity that they recognise to be of primary importance for local people.

The major limitation to *grajut* harvesting is the length of time required and the physical discomfort that must be endured. At peak times, some people working in pairs (usually married couples) were reported to be collecting 300 or 400 Baht of *grajut* per day. However, these harvesting expeditions could only be continued for three or four days at a time in order to allow time for the wounds to heal. In Baan Glaang Phru there is a large area of degraded reserve forest (*paa so-nguwan*) that is in effect common land for *grajut* harvesting. In one large section of this commons, villagers are able to stake a claim that allows them exclusive rights of access. The *Phuu Yai Baan* has limited these plots to three *rai* so as to ensure equitable access for all the village (cf. Hall 1994). This area of common land is particularly attractive to *grajut* harvesters as it is more easily accessible than areas in the dense *phru*. Throughout the year there is enough water to allow access by boat.

Once the *grajut* is harvested it is either dried or sold immediately to other people to dry and make into mats. When harvested the *grajut* is gathered together in bundles, which are later placed in the sun for at least one day to dry. All post-harvest work with *grajut*, other than selling, is done exclusively by women and children. Once they are dried they are pressed in some form of mangle. This usually consists of a heavy cylinder of concrete that people stand on and roll over the *grajut*. One mangle is usually shared between several households.

Recently there has been a trend towards specialisation in the extraction and trade of raw *grajut*. The case of Brajuab illustrates many of the issues relating to *grajut* in Baan Glaang Phru.

Case Study 4: Nay Brajuab

Nay Brajuab was 51 when I first met him. Born in a nearby village in the Phru Khuan Khreng he moved to Baan Glaang Phru when he was twenty-five to marry and settle. He has seven children, six sons and one daughter. Four sons are still at home, while the remaining three children (two boys and a girl) live and work together near Bangkok. *Grajut* has become the main economic activity for Brajuab and his wife. He abandoned rice farming as his fields were too far away in the village of his birth. However, he has not yet sold the land. The low yields in the Phru as well as the costs of fertiliser and dangers of flooding mean that for Brajuab rice offers no profit (*mai mee gamlai*). Previously he was an active fisher but has now given this up. He believes that it is no longer worthwhile as the number of fish has declined so dramatically. He attributes this partly to improved efficiency of fishing gear but more significantly to increased acidity of the waters. Mostly he buys fish from other fishers in the village, or else fishes himself for domestic consumption. A catch of three kilos in one day is enough to feed his family for three days.

Now that Brajuab's only daughter has left the village, they have become one of the few households in Baan Glaang Phru that make no mats at all. His two adult sons spend several months working on construction sites in the city. He collects wild (what Brajuab refers to as '*thammachaat*') *grajut* and has also planted 20 *rai* of *grajut* in the *phru* opposite his house. He and his wife collect *grajut* everyday for approximately seven hours. His wife's main duties are to bundle the *grajut* together, although she also helps pulling the *grajut*. The cultivated *grajut* grows taller than the wild, and is harvested once it

has reached a height of 2.5 metres. The wild *grajut* is harvested once it is over 1 metre tall. On average twenty bundles (*kham*) of *grajut* are collected each day. The price of these bundles varies according to length, with the 2 metre bundles fetching 12 Baht per bundle, and the shorter ones 4 Baht.

Brajuab considers the prospects for *grajut* to be very good. He believes that *grajut* is not affected by high acidity levels and that it grows so quickly that it cannot be over exploited, as long as care is taken. However, sustained low water levels in the *phru* restrict *grajut's* growth rate. He is also confident that the market for *grajut* products will continue.

(NB. Tragically Nay Brajuab died during the field work. He was a charming, well respected man, and an invaluable source of knowledge and friendship.)

The weaving of mats is a long established activity that can be seen in villages all around the Phru. Within the last ten years the Community Development Department has organised occasional training sessions in order to teach local women to develop new patterns and colour schemes in their mats. There are now three main styles of mat to be found that fetch different prices but also require different levels of skill and time. The most traditional form of mat is a large rectangle (over a metre in length) with no colour. A more recent innovation is the use of strands of *grajut* that have been dyed to produce a single mat that has a simple, one colour design running through it. The most recent and valuable innovation in mat design comprises three smaller mats stitched together. These mats have more intricate colour patterns and fetch the highest price. However, not everyone has the skill or time to produce such intricate mats. Most women working on their own are able to produce at least one mat (of any design) per day. Some women specialise in the larger mats (ca.30 - 35 Baht) and produce more than one, whereas others specialise in the higher value, intricate design mats which can fetch a price upwards of 70 Baht. Several households with many women are able to produce at least one mat per person and collectively earn a substantial daily income.

The development of the *grajut* industry has led to specialisation at various stages in the production cycle. The relative abundance of *grajut* in Baan Glaang Phru has led to a growing network of market traders. Each has tried to specialise in some corner of the market that does not conflict too strongly with other village traders' activities. For those with only one or no women in the household, specialisation in the collecting or trading is common. Households with several women are able to produce many mats and co-operate in performing daily domestic duties. In Baan Paa Sombuun, where *grajut* is less abundant, many people buy the raw *grajut* from other areas, most commonly from Baan Glaang Phru. There is also a greater level of specialist mat production in Baan Paa Sombuun to compensate for the loss of profit caused by having to buy the *grajut*. Relative affluence of some households has led them away from collection of *grajut* themselves to production of mats or trading. There is a growing trade in raw *grajut* from Baan Glaang Phru. Up until recently the most valuable *grajut* was the longest. However, a new market for shorter lengths has emerged for use in expensive three-in-one colour mats. Several people are now *grajut* traders who specialise in this shorter *grajut*. Since it does not take the time to grow to the length required previously, it can be harvested more frequently and more easily. Glin is a case in point. He has used his savings from construction work and rubber to invest in a pick-up truck and now buys bundles of the short *grajut* in Baan Glaang Phru. This he then sells to a relative in Thale Noi where the production of the high value mats is more widespread. Grajut trading does not conflict with the demands of his rubber production, and the two have now become his main source of income.

The market networks for trade in *grajut* are extensive. Market traders from within the villages and from outside come on a frequent if erratic basis. Both Baan Paa Sombuun and Baan Glaang Phru are well-known as sources of *grajut* or of mats. From the Phru Khuan Khreng the *grajut* or mats are taken to the small market towns of Cha-uat or Thale Noi. In Thale Noi there is an established tourist industry that produces for local visitors but also for sale in Malaysia and Bangkok. One household with four daughters sells their mats to the wife's sister who lives in the province of Phangna. Much hope is placed by local people in the long term economic viability of

the *grajut* industry. *Grajut* production has clearly become more important with the relative decline of fishing and rice farming, and the growth of markets for *grajut* products. It is widely believed that life in the Phru can continue if the economy is based solely on *grajut* and fishing. However, some people also believe that there are too many people collecting *grajut*, and that it is becoming increasingly difficult to find in the wild.

6.v Rubber

The cultivation of rubber (*yaang paaraa*) which is only possible in Baan Glaang Phru has only been for the last ten years. As part of a wider government policy to reforest large areas of the South, the planting of rubber has been actively encouraged and supported with government loan schemes. The slogan 'build the forest, build life - plant rubber' (*sang paa, sang chiwit, pluk yaang paaraa*) is seen on billboards throughout the region. Rubber has become one of the main exports of the South. In Baan Glaang Phru, as in many other rural areas, the cultivation of rubber is the main source of wealth and the main fuel for recent intensified social differentiation.

Rubber can be successfully cultivated in large areas of the upper, higher ground of the periphery of the Phru, as well as on the *khuan* within the Phru. Rubber is an important economic activity in many villages in the Phru. The forest cover of most of the *khuan*s (hillside islands) throughout the Phru has now been totally replaced with rubber trees. Much of the previously mixed forest of the upper parts of the Phru is dominated by rubber plantations. State credit schemes stipulate that no other crops can be planted between rows of rubber trees. Access to suitable land and to credit are the two main factors determining the uptake of rubber planting. While the state will support rubber farmers with seedlings and fertilisers, all other costs must be borne by the farmer. Even with state support, additional costs such as digging the land may be prohibitive.

Rubber trees must be left seven years after planting before they can be tapped. In Baan Glaang Phru much of the rubber has only become mature enough to be tapped

within the last two or three years. Already for most families involved in rubber, it has become the single biggest source of cash income. For those with no or insufficient land or capital, there is often great resentment towards those who have benefited from rubber. The wealth generated from rubber has allowed some local people to buy land from poorer or indebted farmers, and further concentrate their wealth and power in the village.

Once mature the rubber is tapped in the morning or middle of the night. The tapping of rubber is also dependent on the seasons. During the rainy season and the time when the leaves have fallen off the trees, rubber cannot be tapped. The seasonality of rubber easily fits with the calendar of activities in Baan Glaang Phru.

Rubber is cultivated at different levels of intensity in Baan Glaang Phru. Sixty per cent of interviewees cultivated rubber on their own land, and a further six per cent hired their labour to other village rubber producers. Of those cultivating rubber themselves, the majority (90 %) have planted their rubber within the last fifteen years as a result of government assistance. Much of this rubber has not yet, or only just reached maturity.

Rubber: Land holdings

(Average land holding for rubber cultivation = 7.7 *rai*)

Land Area (*rai*)	%
1-5	30
6-10	21
11-15	27
16-20	11
21-25	3
26-30	6

Yields from rubber vary widely, and not solely due to the area of land under rubber cultivation. The main contributory factor is the age of the plantation as trees reach

maturity after seven years. The first two or three years of maturity are the least productive. Typical daily yields are summarised in the following table.

Daily Rubber Yields

kg	%
< 5	15
6-10	50
11-15	15
16-20	5
> 20	15

Of those with a yield of less than 5kg/day the majority are from trees that have only reached maturity within the last two or three years.

For the majority of those cultivating rubber, it has now become the main source of cash income. For Suchard, like many others in Baan Glaang Phru, rubber now dominates all other activities. He still holds 13 *rai* of rice land but no longer uses it. Fishing is carried out on a '*reey reey*' basis, solely for consumption and he still harvests *grajut* which his wife uses to make at least one mat a day. Eight years ago he planted 13 *rai* of rubber which reached maturity one year ago. He is now able to tap 10 kg/day for six months of the year, but expects the yield to improve over the next few years

Those without land are largely excluded from the rubber trade. The issue of access to land and associated resources (including political influence) is controversial in Baan Glaang Phru. The wealth that the poor see generated by inequitable access to land is a source of gossip and some resentment. For many, such wealth is unimaginable. The case of one particular man who has access to cultivable land leading from the base of the *khuan* to the *khlong* is revealing. With an area of approximately 3 *rai*, it would be economically viable to plant rubber in this area. Despite the availability of government assistance if the required land title documents are presented, the cost of hiring a mechanical digger (*macro*) to turn over the land would be prohibitive. For

him, the potential wealth from rubber is a mystery. The prospects for the future for the poor in Baan Glaang Phru remain bleak. Fishing and *grajut* are sufficient for subsistence needs, but not enough to pay for the education of children or for material goods. However, without land or access to credit he is unable to move into other activities. Rubber is an attractive, yet seemingly impossible option. As he says,

> " You can't be sure how much people make from rubber. Sometimes it's as much as 1200 or 1800 Baht a day. I have to leave my family and go to Hat Yai to earn only 3000 Baht for a whole month's work in construction. If I had a rubber plantation I could stay and work in the village too."

Rubber cultivation had encouraged another villager to move away from use of natural resources for market, except for occasional fishing and mat-making. For most of the year he is able to work as a rubber-tapper for another villager, earning 100 Baht a day. This income is supplemented by his work as a motorcycle taxi-driver when work is available. For him too, rubber holds the key to future life in the village. However, without access to land he is unable to plant rubber himself.

This strongly held belief that rubber is the basis of economic differentiation within the village leads those excluded to emphasise such issues as land and credit in terms of management of the Phru. As such differentiation intensifies the interests of different resource users can be expected to move even further apart.

Despite the widely held belief among the poorer in Baan Glaang Phru that rubber cultivation offers great financial benefits, the rewards from rubber are not certain. The nearly 50 % drop in price following the collapse of the government of Chuan Leekpai ate into many small-scale rubber producers' expected profits. With a daily yield of less than 5kg/day the change of the price of rubber from 40 Baht/kg to 23 Baht/kg made rubber less profitable than construction or other labouring work. However, despite the fall in price of rubber, no interviewees considered it to be no longer viable. Even with only 7 *rai* of land, for Lek rubber has become the main source of cash income. The effects of the collapse of rice farming with the floods of

the last two years had only been softened by the timely maturation of his rubber plantation. Having only matured 3 years ago, the yield was a relatively low 5kg/day but could be expected to improve in the near future.

Other villagers have a large and growing area of land devoted to rubber plantations. For Lai rubber has not only supplemented his income from other activities (including fishing, rice and *grajut*) but has now become the main basis of his wealth. Having planted the first 20 *rai* of rubber seventeen years ago, he was now able to tap at least 15kg/day. Only half of this land was tapped by Lai himself, the remainder was tapped by hired labour in the village. The future clearly lay in rubber and the year before he had planted a further 30 *rai* of land. There is evidence that the wealth generated from rubber has been used to buy up land in the village, and has allowed investment in other activities. For example, one larger-scale rubber producer has invested in productive land that he now uses to grow water melons and cashews. He has also invested in a small chicken rearing operation.

6.vi Rice

The cultivation of rice was an essential subsistence activity for the early settlers of Phru Khuan Khreng. Forested lands were burned and cleared for planting rice. However, only one crop a year was possible and the yield was low compared to other areas of Thailand. Most interviewees calculated rice yield at 100 kg per *rai*. This is low by national and local standards. For example Parr (1994) calculates the average rice yield in the Thale Noi Non-hunting Area to be 299.6 kg per *rai*. The uncertainty of the floods was a constant threat, and several crops within living memory were lost. The heavy flooding in 2508 BE in Baan Paa Sombuun was the main incentive for people to leave the permanently and led to the decline of the village.

The last three years have seen heavy flooding. Many interviewees in both Baan Glaang Phru and Baan Paa Sombuun continued to plant but were unable to harvest their rice. Those people who did continue to harvest rice had planted their crops on land outside the villages. Intermarriage between people from neighbouring villagers brought families, lands and other resources together. Recent improved

communications have meant that kin groups spreading several villages are now able to pool their labour for the rice crop. The failure of the rice crop within the villages creates a surplus of labour which can contribute to the harvest of extended kin groups. Payment is usually in kind, usually in the form of a share of the crop.

Many rice fields are now idle, or have been sold. There is speculation that proposed projects around the Phru will control the level and intensity of flooding. There is a market for some old rice land depending on its situation and soil quality, particularly in Baan Glaang Phru. Most old rice fields are left for grazing cattle, others have been replanted with fruit (bananas, cashews and watermelons). But for most small-holders without access to credit, the fields remain unused.

Rice has never been the most productive activity in the Phru. The heavy flooding of the last three years has accelerated a trend that for many people began more than ten years ago. The opening of a road link in Baan Glaang Phru, and improved communications in Baan Paa Sombuun made access to the market and bought rice more available. The relatively low yields in the Phru, and the changing price of villagers' opportunity cost of labour and credit conspired to make rice cultivation around the villages a less attractive proposition. For Chit since 1981 rice has no longer been a viable option. For Chit's neighbour cultivating rubber has made more cash available, and easily offsets the cost of buying rice in the market. The time demands for rice no longer fit with many people's resource use plans, and often conflict with the more reliable and profitable activities of rubber and *grajut*. The failure of the rice crop for the landless is yet a further incentive to find work outside the villages.

6.vii Honey

The collection of honey (*nam phung*) in the melaleuca forest (*paa samet*) illustrate some important points about how local people use and own the resources of the Phru, and about the ways in which seasonally available resources are incorporated into different livelihood strategies. There is no evidence of any locals ever having

reared honey bees, and collection of honey is on an ad hoc (*reey reey*) basis, as part of a fishing expedition. If a hive is spotted, the honey will be collected there and then, or else assistance will be sought. Branches are lit and one person then climbs the tree and smokes the bees out of the hive. In collecting honey, it is known that destruction of the whole hive will reduce the availability of honey for the next year. If only one part of the hive is removed, the bees will fly in the area for two or three days and then come back.

Honey is collected by several people in both villages. Of all the resources available, honey is the one which is argued to require the greatest skill (*fimeur*), knowledge (*khwam ruu*) and ability (*khwam samaat*). Not only is knowledge required in identifying the location of a suitable hive, but skill is also required in climbing the trees, removing the hive without being stung. Individuals who collect honey are identified as being particularly skilled. All these people learnt their skill from their fathers or other older male relatives.

The honey season is short, but the price of honey from the melaleuca is considered to be high at 300 Baht for a 660cm bottle. For Suwat honey has become the joint second (with fishing) highest source of income after mat-making. During the two month season he can collect up to ten bottles.

In Baan Glaang Phru a distinction is made between the melaleuca honey found in the *phru* and the hives of wasps which are found in the trees of the *khuan*. Hives of wasps or bees that are found in trees on land that is owned becomes the property of the owner of that land. However, hives found in the *phru* are considered common property until they are claimed. Although bees make their hives in similar places year after year, no claim of property rights can be made to the tree or the hive.

6.viii Livestock

All interviewees were involved in some form of livestock rearing. Often this only amounted to rearing ducks and chickens for domestic consumption. However, for

many families, particularly in Baan Paa Sombuun rearing water buffalo and cattle is an essential economic activity. The cattle are allowed to graze by themselves, which again is referred to as being *'thammachaat'*. Water buffalo are now reared on what was formerly rice land for Baan Paa Sombuun. A similar trend appears to be developing in Baan Glaang Phru. Many of the rice fields surrounding the *khuan* have not been planted and are now used for grazing. For Porn, rearing cattle is second only to rubber. He now uses his rice land to graze ten buffalo and five cows. This year he expects to sell four four-year old buffalo (for between 7000 and 15000 Baht) and four cows (between 7000 Baht and 10 000 Baht). He trades solely with his wife's family in *amphur* Hua Sai, and is considering investing further in livestock.

Rearing water buffalo does not necessarily provide a regular income. Usually only one or two animals are sold per year at a typical price of 7000 Baht. The sale of livestock does not always occur on a regular annual basis. If an animal dies (for example, as a result of flooding) it can usually still be sold, but only for 4000 or 5000 Baht. However, water buffalo are an important investment, and a source of income in times of hardship. On a small scale they are also an important cultural resource. One person said he only reared cattle so that he could make merit (*tham bun*) by donating them to feasts during village festivals or funerals.

Water buffalo are an especially important resource in Baan Paa Sombuun and as such represent an adaptation to environmental change. One of the main objections in Baan Paa Sombuun to the Phru Khuan Khreng reservoir project was that valuable grazing land would be flooded. The discussion is now centred on whether the possible regeneration of the fishery would compensate for the loss of grazing land.

6.ix Migration

The Phru Khuan Khreng in common with much of rural Thailand is pictured as being an area in socio-economic decline leading many of the locals to migrate to urban areas. This is a trend that is clearly in evidence in both villages, but for many

migration and hiring of one's labour is another livelihood strategy to add to village-based options.

Migration for individuals or households has become one of the main sources of cash for both villages. Migration is an option that can be taken up at different times of the year, or at different stages in peoples lives. Every household interviewed has, or has had, at least one member working in a nearby urban centre. With improved road communications all areas of the south are easily accessible, and even Bangkok is only 12 hours by train. The economic growth of the last decade has been particularly evident in the South, and a number of employment opportunities are available. With a daily income of between 100 and 200 Baht, hiring out one's labour (*rap jang*) is often an attractive option. However, most of the work is hard toil, for many hours a day. Work in the construction industry is notoriously dangerous, and is without insurance. In conversations with migrant workers there is an obvious dilemma to choose between the relative peace of living in the Phru with one's family and friends, and the excitement of the big city. Since all those who were interviewed had returned to the village, a rather negative image of the city emerged. However, it should be said that it was not possible to balance this view with interviews of those who remained in the cities.

By far the most common form of employment is in the growing construction industry. Much of this is concentrated in the urban centres of Hat Yai, and to a lesser extent Songkhla and Patthalung. The areas of Hua Sai and Ranot to the east the Phru have witnessed extensive building in the wake of the shrimp farming boom. Some locals have even found work as shrimp pond managers. Other people have found work in the tourist industry in such places as Phuket and Koh Samui. One obvious offshoot of this non-permanent migration is the growing awareness of other areas of Thailand. With marriage between Phru people and outsiders increasing, people in the Phru are gaining access to economic and social resources far beyond the boundaries of the Phru. Often remittances from migration constitute the most important source of cash in household's resource profiles.

Most migration takes one of three forms. The most prevalent is for young people (usually men) to leave the Phru to work in the cities in order to 'seek their fortune. It is expected that in doing so they will also make a financial contribution to their parents and the rest of the household. This form of migration is Normally for two or three years. Most of those who return have saved enough money to buy land and build a house, and to pay brideprice. For most young men, working in urban centres is the only way in which enough cash to pay for such expenses can be obtained.

For others migration is a long standing feature of the annual calendar of activities. This form of migration is most clearly linked to environmental degradation (viz. the decline of the fishery) and to poverty. For example, nearly all of the 25 % of the population of Baan Glaang Phru who had less than 2 *rai* of land, had at least one male member working outside the Phru. Most of these people try to fit migration into the seasonality of the Phru and leave the Phru in periods of inactivity. However, the poor fishing harvest of recent years, combined with the collapse of rice cultivation in the Phru, has meant that these activities that previously could guarantee employment and income in the Phru, are no longer viable. For some, migration is much more long term. Several older people had spent upwards of ten years working outside the Phru. Of course, many 'migrants' never actually return.

6.x Trade within the villages

Increased market activity in Baan Glaang Phru has generated internal markets for goods and services. There are five general stores in the village, two noodle stalls, and even two 'snooker halls'. Several households, often the same households who are involved in the above businesses are also involved in taking *grajut*, rubber or fish to local markets. One couple also ran a clothing factory that made school uniforms. The factory employed a dozen or so local girls as seamstresses, taking completed orders by pick-up truck to Bangkok every fortnight. However, this business closed towards the end of the fieldwork.

The greater market activity and more widespread economic specialisation in Baan Glaang Phru has also created markets for skills and labour within the village. Many men in the village have experience in construction. The recent 'housing boom' (largely generated by returning migrants) has created a demand for builders which has allowed several of these young men to remain in the villages. However, this is not a consistent or reliable source of employment. There is also some trade in fish traps (*sai*) and boats. Several old men who are no longer fit enough to go fishing in the *phru* earn an income from selling *sai* to other villagers. This remains an informal trade.

These types of activity are not possible in Baan Paa Sombuun. The 'general stores' only stock the most basic goods. Building work is performed on a reciprocal rather than cash basis.

6.xi Conclusion

As with other fisheries, wetland fisheries display characteristics of uncertainty in terms of fish stocks and behaviour, and in terms of definition of boundaries of the resource system. As with other fisheries there are a number of resource users utilising a common resource. Wetland fisheries also differ significantly from other types of freshwater fisheries. Most importantly, as this chapter has illustrated, fishing is one component of a pattern of multiple resource use. Adaptation to seasonal environmental change has always been a necessary feature of local livelihood strategies, but as the effects of wider environmental and socio-economic change become more evident, so too does the need for further adaptation become more necessary. In this context, it becomes more complicated to assess the extent of local involvement in fishing, and thus the local economic value of fishing. It is clear however, that in order to do so, fishing must be placed in the context of dynamic patterns of multiple resource use.

The extent of involvement in the fishery in the Phru varies enormously from household to household. This chapter has sought to illustrate the most significant

aspects of this diversity of fishing activity. Firstly it must be noted that many more people are involved in the fishery, even if only on an informal level, than are assumed to be in the existing literature on the Phru (see Taylor and Sons 1985, CORIN 1994, Parr 1994, Heady et al 1995, Masae & McGregor 1996). It is clear however, that overall involvement in the fishery has decreased. The causes for this decline are partly due to a perceived environmental change and subsequent decline in yields, but also to market penetration and the emergence of alternative livelihood strategies. However, the fishery remains an important commons resource for those sections of the local community that are unable to participate fully in more lucrative activities. It is also an important fall-back and safety-net for those earn cash outside the Phru but who return to maintain a subsistence living.

There is also great diversity within and between the two villages in levels of fishing effort, and fishing techniques adopted. The highly localised and seasonal variance in environmental conditions within a wetland necessitates a variety of gears suitable for these conditions, and also suitable for catching the more economically important fish species (cf. Masae & McGregor 1996). No fishers in the Phru use one gear type to the exclusion of all others. That certain gears become more widely used is due to their perceived efficiency in terms of catch, but also related to the opportunity cost of the time required to set these gears. Again this is a more significant factor in a wetland economy as fishing is one of a number of resource uses; its importance being partly determined by the costs and benefits of other activities.

Clearly cost of gear is an important factor in selection of gear type (cf. Heady et al 1995). However, issues of cost in the Phru Khuan Khreng are quite different and more complex than in a lake fishery such as Thale Noi (cf. Masae & McGregor 1996, Heady et al 19995). The context in which fishing occurs in the Phru is such that there is a wider range of factors influencing individual fishers choice of gear. While traps tend to be used by wealthier fishers in Thale Noi, they are more widely used in the Phru, and particularly by poorer fishers and those who depend on the fishery more throughout the year. Gill nets which are widely used throughout the year in Thale Noi, can only be used during the flood season in the Phru. At the same time, in the Phru traps can be made from locally available materials for a relatively low cost,

whereas gill nets must be bought and only last for a few years. These are important observations. Traps tend to catch mature specimens of more prized species. It might be expected that in periods of declining yields local fishers might use gears that catch less discriminately, but with higher volume of catch. However, this does not appear to be the case in the Phru. Nor is there any evidence of widespread use of gill nets with low mesh size. This is partly due to the economics of catching higher volume of less valuable fish, but also to a local belief that to use such gear would have an undesirable effect on the overall fishery.

While the economic status of fishers does clearly influence the type of gear employed, the correlation between wealth and gear used is not so strong in the Phru.. The most successful and wealthiest fishers in the Phru are clearly those that can utilise the greatest variety and number of gear types. However, it could not be said that fishers using traps could be classed as the wealthiest, or that gill-net fishers are the poorest. The picture on the ground is too complex for such reductionism. This is clearly significant if bio-economic models of a fishery as applied by Heady et al (1995) are to employed to model the distributional effects of restrictions on certain gear types. If poverty eradication is to be a target of fisheries policy in the Phru, then it surely must adopt a different approach. As will become clearer in the discussion in the following chapter, rehabilitation of the fishery and support for complementary economic activities are more appropriate for the Phru Khuan Khreng.

Since patterns of involvement in a fishery such as that of the Phru are more complex and dynamic than for permanently inundated freshwater fisheries, there is a need for a model that illustrates the interlinking variables that influence fishing activity. This is partly supplied by the model of market, state and community as utilised in the original ODA project. While the state has played only a minor role in influencing local level fishing activity, its role should not be neglected, and will be discussed in chapter seven. The market influences on fishing activity are not restricted to the direct influences. It is clear that the market influences fishing activity that aims to catch live specimens of prized species, by utilising gear such as traps and hooks. However, in the context of multiple resource use the market also influences the benefits to be determined from other economic activities. That the *grajut* industry has become so

widespread that it even conflicts with fishing activity is clearly a result of market demand for *grajut* and *grajut* products. Fishing is a low-status activity in Thailand (cf. Masae & McGregor 1996) and many people believe it to be a livelihood strategy that holds little prospect for the younger generations. Opportunity for economic betterment are believed to lie in alternative activities; particularly rubber, trading or migration.

In such a complex fishery as the Phru Khuan Khreng, analysis of fishing activity cannot be at the level of 'the community' or even of economic class. The people-centred ecology that emphasises the agency of actors in resource use is most applicable in this context. The Phru is in a state of flux in which people are troubled by great uncertainty. Individuals and households are responding in a full range of ways. This economic dynamism is also influencing notions of shared interest and community. Without an appreciation of this internal dynamism no bio-economic model of the Phru fishery or of Phru resource use can hope to be devised.

One theme that is clearly evident in local livelihood strategies is that of greater direct human intervention in management of the Phru environment. Previously natural abundance and seasonal plenty mitigated against the need for large-scale management. People adopted a '*reey reey*' approach to a largely subsistence economy. However, as the commons resources become less plentiful and access to other resources more financially rewarding, the subsistence economy becomes less viable. In fishing activity greater human intervention in management of the environment can most clearly be seen in the use of the bor lor refuge traps. Previously this type of fishing was conducted on a small scale, limited by lack of technology. It has now become a far more widespread and intensive activity, that as will be discussed in the following chapter, generates a great deal of controversy.

The shift from subsistence, commons based resource use also inevitably leads to greater specialisation in more economically productive activities. However, this is shift that requires access to capital and land; something which is beyond most in Baan Paa Sombuun, and at last a quarter of Baan Glaang Phru. Most people expressed this by saying that in former times '*haa gin ngai gwaa*' (subsistence was easier) but that in

recent times *'setthakit dii kheun'* (the economy has improved). Not only does this shift have economic ramifications for locals, it also conflicts with conservation interests. The use of multiple resources by people in the Phru has been a key feature of their livelihood strategies. While this has been interpreted as indicating a lack of economic efficiency, the evidence in this chapter would suggest that multiple resource use strategies are particularly appropriate to an environment as dynamic as that of the Phru Khuan Khreng.

The diversity of adaptive livelihood strategies that this chapter has sought to illustrate also represents a diversity of interests, values and knowledges. If, as such writers as Chambers (1997) and Majone (1989) argue, successful environmental management policy requires the inclusion of multiple realities into the policy process then the multiplicity of realities as illustrated in this chapter must also be addressed. However, this itself should not be interpreted as what Majone (1989) would call a decisionist recommendation. As will become clearer in the following chapter, understandings of the environment and of resource use have wider political implications.

CHAPTER SEVEN

THE DECLINE OF THE FISHERY; ENVIRONMENTAL CHANGE, LOCAL PERCEPTIONS AND RESPONSES

7.i Introduction

The decline of the fishery, universally acknowledged by locals, policy-makers and academics, signifies a profound environmental change in its own right. It also clearly has socio-economic ramifications for the local population. The previous chapter illustrated the diversity of local responses to this decline and the shifting importance of fishing within local resource profiles. This chapter will explore in greater detail local explanations for the decline of the fishery, based on understandings of changing environmental conditions, and local responses to this perceived change.

That the environment of the Phru Khuan Khreng has undergone dramatic change is not locally disputed. What is very much a matter of dispute, however, is how this change is interpreted and what responses are thought appropriate. The previous chapter illustrated a general shift away from subsistance resource use based on the *phru* commons. Significant sections of the population of the Phru have moved away from the fishery. Many have supplemented or replaced fishing activity with other activities in the Phru, most notably *grajut*, cultivation of rubber and rearing livestock. Others have become more involved in trading their labour in urban centres. Not all households have had the same 'room for manoeuvre', even with similar incentives to adapt. The capacity of people to accommodate the declining fishery clearly influences how that decline is interpreted. These interpretations of the fishery are to some extent environmental, but also concerned with notions of economy and community. Not all people have been affected to the same extent, and the meaning and significance of these changes is currently being negotiated, both within and between communities. Increasingly state agencies with their own interpretations of environmental degradation and policy recommendations, are also being drawn into this debate. The story of the degradation of the fishery commons and the decline of fishing's relative importance within local resource profiles provides an insight into the ways in

which environmental change, livelihood strategies and notions of community are interlinked. Since fish are a resource that are largely hidden from view, and yet depend on the interrelationship between people, trees and water, understandings of the fishery reveal much of local understanding of the wider Phru environment. The clash of rationalities between policy-makers and local people is evident in conflicting interpretations of environmental change, and also in conflicting management proposals. This chapter will address this clash of rationalities by assessing local DOF understanding of the Phru fishery, as well as local understandings. It will then contrast the local use of refuge trap ponds with DOF promotion of aquaculture.

Explanations for the decline of the fishery adopt two, sometimes overlapping approaches. On the whole, the state and local level DOF officials place the emphasis on overfishing as the primary cause. Local-level policy recommendations therefore focus on the need to police and enforce existing legislation. At the same time, the most widely advocated small-scale initiative towards the fishery in the Phru is the promotion of aquaculture. A project has already been established in Baan Glaang Phru, and this will form the basis of a discussion at the end of this chapter. While local people point to overfishing as a contributory cause, a number of other factors are also raised. These highlight ongoing processes of environmental decline in the Phru, as well as a series of local responses that are believed to continue the spiral. In contrast to the aquaculture introduced by the state, there is a more widespread uptake of the use of refuge traps (*bor lor*). This has also been identified as further cause of the decline of the fishery in the Phru. It has drawn the people of the Phru into conflict with the fishers of Thale Noi who regard *bor lor* to be causing the decline of their own fishery.

This chapter will be divided in two. The first half will discuss local understandings of the relationship between environmental change and the decline of the fishery. Much of this discussion will be based around the fishing season of the 1995 rainy season. It was widely believed to be a poor season in the Phru and in Thale Noi, and inspired a range of responses. One of the main issues that was raised was that of *bor lor*, and of aquaculture. These contrasting responses to the declining fishery will form the basis of the discussion in the second half of the chapter.

7.ii State and Rural Society: Perceptions of Environmental Change in the Phru Khuan Khreng

Explanations for environmental degradation are intertwined with cultural understandings of rural society. In chapter three, two prominent discourses of environment and development in Thailand were outlined. Between these two poles of the debate lie rural people themselves; not as the passive objects of academic debate, but as active participants in an ongoing and unresolved struggle over the direction of development and control over natural resources. The Phru Khuan Khreng provides an excellent example of rural people caught between the extremes of this debate. Ecologically the Phru is complex, its value and function is poorly understood and historically has been long neglected. The Phru has been regarded as providing limited potential for economic development in its preserved state. The 'conservation' value of the Phru has only recently been recognised. It has been portrayed as a troublesome and 'backward' region, and remains an area of minimal political influence. Nor does the cultural history of the Phru fit with the idealised notions of rural life held by the 'counter-narrative'. Indeed no NGOs are currently working in the Phru. However, as one of the few remaining wilderness areas of Southern Thailand it has become an arena for competing notions of development, conservation and environmental management.

An enduring theme in the development discourse of the Thai state is the responsibility of rural peoples for environmental degradation. This is not simply an issue of who is to blame for environmental degradation but also an issue of who should have overall control over natural resources. Often establishing blame for environmental degradation has become the basis for state intervention in environmental management. In much the same way that authors such as Hirsch (1990) argue that development was a tool for strengthening the identity of the nation state and expanding the power and influence of state organisations, the new discourse of conservation has allowed the state to make further claims to previously marginal natural resources and claim them as national resources (cf. Ghimire 1994). This is a process that has not gone unchallenged. Recent initiatives and calls for decentralisation and co-management have raised the profile of local people as

resource managers (cf. Hirsch 1995a), and have even been included in national development plans (NESDB 1997). How this rhetorical commitment to decentralisation and co-management will be translated into practice remains to be seen.

The relationship between the state and rural communities, and the enduring representations of rural life in the Thai state's development discourse all influence the ways in which the Phru is represented in the policy arena. The extent to which popular prejudices of the Phru penetrate the thinking of policy proposals can again be seen in the Taylor and Sons pre-feasibility study for Songkhla Lake Barrage (cf. chapter four). In a section discussing the people of Baan Glaang Phru's attitudes to the environment they write:

> "The villagers feel that the existing environment does not make their life comfortable. The marshland which the villagers originally believed to be a valuable natural resources for their community has turned out to be not very beneficial. They have been told not to cut the cajaput trees which they want for firewood and to build houses. The soil in the marshland is acid-sulfate soil, unsuitable for cultivation. The water in the marshland cannot be put to consumption except for growing jud plants and only few species of fish can survive in this water. The annual occurrence of flooding, which lasts 1 to 2 months and which the villagers know no way to prevent or mitigate, may be one of the causes for their idleness and unplanned life. Worse still, the villagers are always taken advantage of by the merchants when they sell their mats and fish to the shops." (Taylor and Sons 1985 p18-22)

This quotation is significant for a number of reasons. Several important and enduring images that continue to dominate policy attitudes towards the Phru are revealed. There is a strong element of environmental determinism combined with a prejudiced view of local capacity. The harsh environment prevents economic rationalisation and perpetuates idleness. This, it is argued, is a situation that the locals are unable to overcome without outside assistance. The apparent lack of fixed order and the

inability of local people to maximise the utility of resources (particularly the resources of labour and time) implies ignorance and inefficiency. The villagers are presented as being at the mercy of a harsh and unpredictable environment that they are incapable of understanding and managing. This is an impression that is in stark contrast to the integrated livelihood strategies of local people and the complex juggling of various resources and livelihood strategies (see chapter six). Most importantly, such representations of the Phru deny the rights and capacities of local people to manage their environment, and to stimulate economic efficiency and growth. In the case of the Taylor and Sons report, it suggests that the existing conditions of the Phru are not worthy of conservation. Thus any changes resulting from the Songkhla Lake Barrier would constitute an improvement. It further implies the need for intensified government involvement in claiming rights of ownership and management of the Phru. Although the above passage did not appear in the final version of the report, it is further evidence of official attitudes towards the Phru Khuan Khreng. The Taylor and Sons report is widely regarded as the most authorative, interdisciplinary study of the Lake Basin. The fact that the report has been produced gives a great deal of weight to the arguments it presents. Almost identical attitudes were expressed throughout the course of my own fieldwork and in interviews with many government officials.

Explanations for the decline of the fishery from district (*amphur*) and provincial (*jangwat*) level officials echo many of the above themes. The most commonly cited causes for this decline are overfishing due to an increase in the population of fishers, and the use of illegal fishing techniques. *Jangwat* level officials repeatedly argued that the vast area of the Phru and the lack of co-operation from locals did not allow for effective policing from an understaffed and underfinanced government agency. Overfishing, it is argued, continues because the locals do not understand the damage they are doing, or are incapable or reluctant to act in the collective interest. The policy recommendation that received greatest support from such officials was the promotion of aquaculture, which it was repeatedly stated, had successfully been introduced to Baan Glaang Phru. Indeed, the success of this project was presented as evidence that other intiatives, including more adequate environmental management of

the Phru, were ultimately unnecessary. As will become clearer later, this faith in the panacea of aquaculture is not well placed.

Due to the lack of reliable data concerning the fishery of the Phru Khuan Khreng it is difficult to quantify and evaluate the extent of the decline. Indeed, the doubts concerning the capacity of fisheries biology to adequately model a fishery such as that of the Phru Khuan Khreng suggest that such data may never be available (see chapter six, section 6.iii). While DOF officials responsible for the Phru and Thale Noi recognise the decline of the fishery, they also accept that very little is known about the wider fishery. Efforts to manage the fishery of Thale Noi and the Phru have been concentrated on Thale Noi. Indeed, the fishery of the Phru was not recognised as being important in its own right. The Taylor and Sons quote above argues that 'only a few species of fish' can be found in the Phru, and the fishing season is only for two or three months a year. Failure to recognise the significance of fishing as a constituent of wider resource profiles has already been discussed (see chapter six). While data is regularly collected by the DOF concerning fish catches at Thale Noi no official data is available for the Phru. However, all DOF officials interviewed during this research accepted that the Phru was an important breeding and spawning ground for the overall Thale Noi fishery.

Government officials also acknowledged that more general environmental degradation had contributed to the decline of the fishery. However, this was presented as further evidence of the ignorance of locals, and their inherent inability to manage the Phru for the collective good. Since the Phru has been incorporated into the regional and national community, the collective good is interpreted far beyond the boundaries of the Phru.The environmental degradation that was recognised was also felt to be beyond the remit of the DOF, even though they recognise that degradation of fish habitats as part of wider environmental degradation has had an effect on freshwater fisheries. However, DOF officials continue to emphasise the role of human activity over environmental degradation.

The most significant environmental change of the last two generations has been the loss of the original mixed forest cover. The great fire of thirty years ago was largely

responsible for this damage, but smaller fires in subsequent years have further contributed to this process. Forest fires have been blamed on local people clearing land for settlement and agriculture, and catching the tortoises (*dtao dtam*) that live in the *phru*. This interpretation of environmental change again establishes the ignorance and inability of locals to manage the forest. This in turn creates the need for state regulation and has led to the establishment of the Forest Fire Prevention Unit of the RDF working in conjunction with the Conservation Group (*glum anurak*). The greater part of their management efforts is concerned with policing, and extinguishing fires. Since the origins of the environmental decline of the Phru are set in the time before the establishment of the Thale Noi Non-hunting Area, the RDF are absolved of any responsibility.

7.iii Local Perceptions of Environmental Change

Local perceptions of and explanations for environmental change within the communities of the Phru are heterogeneous and dynamic. The period of change through which people in the Phru are now living is a period of trade-offs. Not all people have been affected by environmental change to the same extent. While there have been many losers in this process, there have also been significant winners. Discussions with local people revealed interesting interpretations of the use of terms such as *singwaetlom* (environment), and *thammachaat* (nature). The term *singwaetlom* has spread into popular usage from the agenda of the urban elites who have created a very particular environmental movement (cf. Stott 1991, Forsyth 1995, Hamilton 1991). This movement has been styled on environmental movements in the developed world and historically arose out of an urban concern for protection of endangered species and natural resources (cf. Ghimire 1994). While the Thai environmental movement often refers to the rural communities as the backbone of the nation and the true keepers of the forest, the communities and the environment have been presented in a highly sanitised form. Despite the tendency to emphasise non-human factors, the debate about the condition of the environment is also by implication a debate about the nature of the Thai rural community, and thus of the nation itself.

The use of the term *singwaetlom* is found in many forms in the popular media. Advertising campaigns tell the people to 'love the environment' (*raow rak singwaetlom*), and not to litter out of respect for the environment. Leafy trees and cuddly animals are the images of this environment. The discourse of conservation has been applied in many forms. However, the interpretation of the term *singwaetlom* by people in the Phru Khuan Khreng is quite different. The term '*singwaetlom*' as part of an environmentalist discourse is new to most people in the Phru. Many do not understand the term as it is presented by the environmentally aware lobby, or from the way it creeps into contemporary television advertising. For many local people *singwaetlom* refers to their material surroundings in general, both natural and human. Many interviewees in Baan Glaang Phru said that the environment in the Phru had improved significantly (*singwaetlom dii kheun ye ye*). This was explained by reference to the building of roads, the introduction of electricity, and the eradication of elephentiasis as a result of spraying DDT. These improvements are closely associated with notions from the state development discourse in which development (*pathanaa*) is equated with becoming 'modernised' and 'civilised' (*jaroen*) ie. with roads, electricity and health (cf. Hirsch 1990). However, the same people would continue by referring to increased difficulty of finding a living from the *phru* because of the decline of the fishery, the increased acidity of the waters and loss of forest cover. Often other interviewees, would say that although a subsistence living was more difficult because of the environmental changes, the economy of the villages had improved greatly (*haa gin men yaak, te wa settakhit dii kheun ye ye*).

The environment of the *phru* has, until very recently been the main source of people's food and incomes. As such it has been the means by which people maintain and perpetuate the lives of their families and communities. For people in rural areas concepts of the environment, of earning a living and raising a family, and notions of community are interwoven. People use the natural resources in accordance with cyclical rhythms of the seasons, with the stages of their lives and with the continuity of their communities. Development of the last two decades has brought in new market potential. This has in turn shifted the relative position of natural resources. Increasingly the spheres of the market and of the state complement that of the environment. However, political and economic differentiation in the villages influence

access to all three spheres of resources. Historically the environment has been the most 'open access' of these sets of resources. The vast area of the *phru* allowed people to claim new fishing or *grajut* grounds, although community rules governing such claims did operate. In general, there were no impediments as long as these grounds had not been previously claimed. Access to the arenas of state and market requires a range of resources, skills and connections (cf. Rigg 1991). As arenas of resources, the state and market remain the most closed.

Many of those who have made a conscious choice to stay in the villages refer to the way in which environmental change and increased commoditisation in the villages has affected the community spirit. One young man, Yut is a case in point. Yut is twenty-four and married with one young daughter. His grandfather's family were among the group of original settlers but Yut is the only one of three siblings to have stayed in the village. He is familiar with the urban life-style of his brother and sister but is not attracted. For him the environment of the Phru has completely changed since he was a young boy. He remembers the nine hour walk through the *phru* to the nearest market, and fondly remembers the wild animals that inhabited the *phru* and the *khuan*. But now he bemoans the environmental degradation and increased consumerism which he recognises has affected all the village, himself included. More than anything else he senses a growing disrespect for the environment as less people are so dependent on natural resources. It has also brought about a collapse of community spirit.

> 'Before there were only between ten and twenty households in the village. Everybody knew each other and most were related. Money wasn't important. People helped each other. You could go to any house in the village and be welcome and be fed. But now it's different. Everybody wants a tv, a fridge, new jeans. People are just interested in money'.

Yut acknowledges that he too is very much caught up in these changes. He does not hark back to a lost golden age as he is aware of the benefits of some material comforts. As a member of a well-established family he has been able to adapt to changing conditions, and has been an agent of these changes himself. His main

income now derives from rubber production on family land on the *khuan*. This is supplemented by collecting *grajut* which his wife weaves into mats, and by occasional fishing. He is also a part-time worker in the Fire Prevention Group. Despite his concerns for the type of life that would be open to his daughter when she grows up, Yut has clearly benefited economically from recent change.

The connection between the declining abundance of natural resources, increased consumerism and commoditisation and the collapse of community spirit is frequently made. One man who has recently returned to the village to build a house and settle down with his wife after ten years working outside the village was disappointed by many of the changes he found on his return. He acknowledged the value of the infrastructural improvements in the village (viz. roads, electricity), but, like Yut was distressed by the increased consumerism and what he regards as the interlinked disregard for natural resources and the community. As he says,

> "Before, the forest used to be dense, healthy (*sombuun*), mixed green forest (*paa kheow*) with lots of wild animals and birds. There were tortoises (*dtao dtam*), monkeys everywhere, armadillos, pangolins, crocodiles, small elephants and even tigers. But people didn't look after the forest. There was no owner, it all belonged to the State so people didn't care. People didn't think about conservation and couldn't imagine a time when it was all gone. But that's what people are like. Now people only think about helping themselves (*hen gae ben ha dtua aeng*), they don't think about working together to solve problems (*my hen gae ben ha suam ruam*) and they don't look into the future. If the water in the *phru* wasn't so acidic people would have chopped all the trees down to use the land for agriculture. If people were just using the resources in the *phru* for their own consumption the forest wouldn't have been depleted so much. But now people think about money and buying things. But what are they going to do when all the forest has gone? Humans can't eat money."

The correlation between environmental degradation and greed and selfishness is commonly made. The loss of forest cover is partly attributed to human greed and short-sightedness. This is also seen to be a result of lack of local ownership of local resources. The Phru belongs to a distant state, for which local people often do not have very much respect. It is perhaps easier for someone who has been able to make considerable cash savings from working outside the village, to bemoan villagers' pursuit of material wealth and overexploitation of natural resources. He is very much a 'local boy made good' having bought land and a house, who is now able to retire to a subsistence-oriented existence in the Phru. This is an option and a perspective that is only realistic for someone who has been able to make such cash savings.

The issue of environmental change and its affects on the quality of life for people in the Phru is not clear cut in their own minds. No-one in the villages would say that the changes of the last two decades have been entirely negative and have not brought any benefits. Indeed this is what makes it so difficult for people to assess the current situation and predict the future. While it was common for many of the older people to tend towards romanticising the past, particularly in terms of environmental abundance and community cohesion, they were also very much aware of the hardship of their former lives. There was also an awareness that the actions of villagers themselves had contributed to some aspects of environmental change. The improvements in transport and communications, the supply of electricity (in Baan Glaang Phru) and the eradication of elephentiasis are welcome tangible changes that have profoundly influenced their daily lives. But these changes are not simply the trade-off from environmental change but more the result of a changing relationship with the state as the source of development. However, in the case of Baan Paa Sombuun, environmental degradation has occurred, but there has not been a comparable level of state development assistance.

People's perception of the environment of the Phru Khuan Khreng is also strongly influenced by their experience of life outside the Phru. Such experience for the majority comes from periods of work on building sites in large urban areas. Their assessment of the environment is intertwined with their experience of work, and the way in which they are forced to live during these periods of urban migration. Notions

of environment and community are again pulled together. Nay is twenty-five years old. He comes from a village outside the Phru on the east coast. He met his wife, the daughter of one of the old families of Baan Paa Sombuun, when he was a monk collecting alms in the village. He has served in the army and has worked as a mechanic in Bangkok, as well as on the construction sites of Hat Yai. He has also worked briefly on construction sites in Malaysia.

> "When I work in Hat Yai on the construction sites I can earn 150 Baht a day, sometimes more. But we have to pay for everything, and in the city it is all more expensive. The work is long and dangerous, and we live in small tin shacks. The air is dirty and the weather is very hot in the city. You can earn cash and save, but life here is much more pleasant (*sabaay*). Look at all the space. We can live a natural life here (*yuu bep thammachaat*). You can't earn money here but you can find enough to eat. All my friends and family are here. I can go into any house in the village and be welcome and be fed. Life isn't the same in the city, people aren't the same." (Nay)

(Shortly after the birth of his first child Nay moved to Bangkok to take up work as a mechanic. Initially he planned to work for a few months but the poor catch of the 1995 fishing season compelled him to continue his work in Bangkok.)

Of course, most of the people interviewed were those who had made a choice to reside in the villages rather than in the city. As such they had already made their assessment of life in the city versus life in the Phru. Among the younger generation those who choose to remain in the Phru are still the minority. Improved communications has made it more possible for many young men to achieve a compromise that combines the benefits of both the city and the village. When they come back from the city to settle in the villages many are able to live off their savings supplemented by fishing and *grajut*, or even odd jobs in the village. But they also bring their consumerist ways back to the village. But many of those who have left the villages and only return at New Year (*Songkhran*) are touched by the romantic images of village life that dominate popular culture (particularly music and TV) and

drift into sentimentality. Often these people, reunited with their families and friends, would blame the economic necessity of working in the cities for their decision to leave the village.

7.iv Local Perceptions of the Fishery

Discussions with local people revealed a more detailed and complex understanding of the way in which wider environmental change and economic development have combined to affect the environment of the Phru, and the fishing practices of communities in the Phru. Local people recognise that there are two main angles on this decline; general environmental degradation, particularly of the forests, and increased fishing effort of locals. Opinion over these issues is often divided according to community membership and tensions within communities. If, for example, overfishing is acknowledged, it tends to be attributed to members of other communities, or to particular groups within their own communities. This is particularly important as members of different communities are involved in different types of fishing activity which are perceived to have an affect on the fishing activities of other communities.

Explanations for the decline of the fishery can be categorised under the following sub-headings.

a) Fisher Population Increase

The most immediate explanation for the decline in the fishery is the increase in the numbers of fishers. The effects on the fishery of the perceived increase in population has been interpreted in two ways. Firstly, it is argued that the increase in the number of fishers has led to a decrease in the real number of fish as too many are being caught. The second interpretation is that the real number of fish has not changed significantly, but that the catch per fisher has decreased as fisher population has increased. There is continuing debate among Phru fishers as to which of these interpretations is the more accurate.

The perceived increase in the number of fishers is not solely attributable to population increases in the Phru. In the two villages included in this study, population change has gone in both directions. The population of Baan Paa Sombuun has been in steady decline for the last twenty years. The population of Baan Glaang Phru, on the other hand, has increased equally dramatically. However, these are merely two among several villages. There is a perception that the total population of all the villages of the Phru Khuan Khreng has been in decline. However, while this may be true improvements in communications have allowed more people access to the Phru fishery. Declines in yields from Thale Noi and growing competition over fishing grounds has induced some Thale Noi fishers to move to fishing grounds in the Phru. Occasional fishers from peripheral villagers also come in to the Phru to fish. Much of the latter type of fishing is on a small scale, usually using cast nets and lift nets for catching small freshwater shrimp. The yield from these gears is considered by villagers to be insignificant to the wider fishery. The encroachment by outsiders engaged in higher yield fishing is more problematic. If their gears are found in fishing grounds 'belonging' to the villages they will be destroyed or confiscated, but on the whole, monitoring such encroachment is considered to be impossible.

The effects of natural population increases in Baan Glaang Phru have already been alluded to in the previous chapter. Increasingly young men who are entering the fishery as independent fishers are having to search out and claim new fishing grounds for themselves. This is partly because prime fishing grounds have already been claimed, but also because the yield from these fishing grounds is believed to have decreased. As a result even sons who contribute their catch to the household are moving further afield from their fathers' grounds.

b) Fishing Effort and illegal fishing

Another widely offered local explanation for the decline of the fishery is in terms of the increase in fishing effort, particularly the use of illegal and over efficient gears. Declining yields have not led to the use of smaller mesh sizes. Local sanctions do

prevent the use of very small mesh size of *gat*, but there are also market and practical considerations regarding mesh size. If the mesh is too small (ie. usually less than 4 cm) the fish caught will be smaller and worth a lower price. It is also more difficult and time consuming to use a smaller mesh. Community sanctions are also important. Since nets are often repaired and dried in front of people's houses it would be more difficult to conceal use of small mesh nets form neighbours.

Illegal fishing is a more contentious issue. There is much discussion concerning illegal and inappropriate fishing practice among people in the Phru. It is acknowledged that illegal fishing continues. This is often despite the efforts of the DOF who confess their inability to effectively monitor such a vast area. The role of the *glum anurak* in this matter is unclear. The main concerns of the *glum anurak* are to prevent hunting of birds and logging. Prohibiting illegal fishing is not strictly in their remit. While it is impossible to evaluate the effects of overfishing on the overall fishery it is widely perceived that there are fishers involved in unsustainable fishing practices. The issue of which villagers are engaged in illegal fishing is highly sensitive. In informal conversations with Forestry officials it was suggested that much of the illegal fishing was carried out by people from other villages and a small section of the local population. It was implied that these local people were largely recent settlers. It was also suggested that those who were engaged in such activity did so out of lack of consideration of the long term environmental costs of their actions. Not all inhabitants of the Phru depend on natural resource use to the same extent, and not all have long term interest in preservation of natural resources. It soon became clear that, rightly or wrongly, many of the poorer sections of Baan Glaang Phru felt that illegal fishing was more widespread but that those involved were those who depended on natural resources the least. It was felt that those caught were people with no political influence, rather than those most responsible. Whereas the poor engaged in illegal fishing activities due to economic pressure, the rich did so out of greed and the ability to evade detection.

A revealing conversation with a middle-aged man in Baan Glaang Phru illustrates this tension. Lung is in his late fifties and was born in Baan Glaang Phru. He is one of the 'landless' section in the village. Married but with no children he spends most of his

time very reluctantly working in Hat Yai. He is resentful that he is unable to earn an adequate income from fishing and *grajut*, and that lack of access to land and credit prevents him from planting rubber. In an uncharacteristic outburst he explained what he perceived to be the injustice of illegal resource use:

> "There is a great deal of illegal fishing round here. People go out at night and use electricity (*chot plaa*) and in twenty minutes can catch a huge amount of fish. But they take everything, all sizes even the baby fish. They just scoop it all up into the boat. Some people use poison too. I know who these people are, but what can I do? I'm just a *phuu noi* (a small person), they're *phuu yai* (big men) with *ithipon* (influence). Everybody knows who does it but I don't dare say anything. If I did say something who would I tell? The police aren't interested. These people can do any kind of illegal thing. If the police catch them they just ask for some money. I live on my own so if I made trouble these *phuu yai* could come to my house one night and do what they like. Most of these people aren't even fishers, they're only interested in business. It's people like me whose livelihoods depend on the fish and the forests who suffer. When it's all gone what will we have to eat? Nothing. But they won't have any problem."

Lung's economic situation is typical of many of the poorer households. With limited kin connections in the village he is somewhat of an outsider and less able to call on the support of other villagers. With only a small area of cultivable land (less than 2 *rai*), no access to credit, and no children to assist him, he has very limited capacity to move away from subsistence activities. His remarks are typical of many who feel they are being pushed out of the Phru.

My own observations revealed one incident involving the complicity of local leaders in some forms of illegal fishing. The use of wide gill nets that cover the width of the *khlongs* is one of the illegal practices condemned by the DOF (DOF Phattlaung undated). Local people also believe it to be very damaging, especially when water levels and fish stocks are low. In one week two such fishing expeditions in the main

khlong were sanctioned by an informal leader. In the first expedition his kin, including his son-in-law, were involved. In the second, known outsiders were involved and it was inferred that a financial transaction had been involved. In only two hours at least fifteen kilos were caught, mainly snakehead, catfish and featherback. This was done openly but was greeted with dirty looks and grumblings by many passersby. In the evening I discussed the day's events with one of the sons of the local leader who had allowed the fishing. He first explained how his father was well respected and despite having no formal political position, was able to sanction such an activity. That his father had the influence to enable him to do so was a source of great pride. Yet he was uneasy that his father had allowed such an activity. He realised that it was unpopular and that such fishing was widely regarded as being responsible for degradation of fish stocks as so much could be caught. However, he also knew that it was not for him to challenge his father, and that no-one else in the village would dare do so.

As will be discussed in more detail below, the increasingly widespread use of the *bor lor plaa* (refuge pond traps) has also been identified as a cause of the degradation of the fishery.

c) Intercommunity Management and Conflict

Each community in the Phru Khuan Khreng uses the fishery within the limits of certain geographical and community boundaries. Local management hinges on the rights of villagers to fish in designated areas, and to exclude non-village members. What individuals do within these areas is then managed at the village level, if at all. However, there is a common perception in each village that practices of other villages affect their own catch.

There is continuing debate between the people of Thale Noi and the Phru as to who is responsible for the degradation of their respective fishing grounds. In the eyes of the people of the Phru, the fishers of Thale Noi are at least partly to blame. They are said to catch everything even the small fish, and to use barrier traps along the

migration routes between Thale Noi and the Phru. These are important routes at the beginning and the end of the rainy season when the fish move to the rich feeding grounds of the Phru Khuan Khreng. The practice of using barrier traps is most acutely felt in Baan Paa Sombuun. At one stage the district DOF official went to Baan Paa Sombuun to explain to the villagers why he had allowed Thale Noi fishers to open barrier traps along the main *khlongs*. He argued that the mesh size was very large and that it would have no impact on Baan Paa Sombuun, but that the Thale Noi fishers had to do this in order to maintain a reasonable catch. While this argument was not accepted the villagers felt there was nothing they could do. It was merely further evidence of how their interests were overlooked. For the DOF the fishers of Thale Noi are a far more important constituency than those of Baan Paa Sombuun. Such feelings of being treated unfairly by government officials generates a lack of respect for government regulations and officials more generally. This tension is an important feature of village relations with the outside, and manifests itself in villager strategies towards the state. These issues will be dealt with more fully in chapter six, but should be borne in mind for the discussions that follow.

For the fishers of Thale Noi one of the forms of fishing that is argued to have the most damaging effects on their catch was the use of *bor lor plaa* in the Phru Khuan Khreng. It was said that the number and efficiency of *bor lor* had increased dramatically over the last seven to ten years. Since they were dug in the dry season refuges when the brood stock is at its lowest and most vulnerable, the large catches of the *bor lor* were considered to seriously deplete the brood stock and therefore the catch available in the next flood season. This tension between those digging refuge traps and other fishers was also in evidence in each community, and between Baan Paa Sombuun and Baan Glaang Phru (see below).

d) Environmental Explanations

All local people talked of the environmental changes that they had witnessed and the effects on the fishery. Old people who had been among the first group of settlers in Baan Paa Sombuun, as well as youngsters were able to detail significant changes;

some recent, some more long standing. As most people agreed, the Phru has completely changed (*plian mot*).

The following case of an early settler reveals many of these issues. Jim is 72 and came in his late teens as an early settler to Baan Paa Sombuun in the 1930s. He spoke of the hardship in settling and clearing the forest in order to establish the village, but also of the abundance of fish, animals and forest products.

> 'When we came here the forest was thick green forest with many different species of trees. It was real nature (*thammachaat jing*). We made fires to clear the land for paddy and to build houses. There were lots of wild animals in the forest; small wild elephants and even tigers. There were lots of different types of fish in the waters and it was easy to catch fish all year round. At this time fishing and growing rice were the most important ways of earning a living. We were not rich but we were not poor. We had enough to raise our families." (Jim)

At this time the Phru was a valuable fishing ground that attracted people from around the surrounding areas. Fishing was a viable activity all year round, but even more so in the flood season. It was considered that there were enough fish for everyone and only the most minimal local restrictions on fishing were enforced. The use of simple fishing gear brought a great yield. At this time it was still viable to use the '*sum*'; a trap that is repeatedly placed in the mud in low water levels, and the fish caught therein removed by hand. This trap is no longer used, except when harvesting the *bor lor plaa*. Other older informants said that at peak times it was possible to catch fish just using a *pakaowmar* (male sarong). Fish were said to be larger, and a greater variety. The large catfish, *plaa duk lampan*, was a great delicacy and was widely available. However, the last sighting of *plaa duk lampan* was over twenty years ago. Since then species composition of catch has also changed and the yield is said to have declined by about 50% (cf. Masae & McGregor 1996).

As has been discussed earlier, the change in forest type and the loss in terms of the area of forest cover have been associated with a loss of biodiversity more generally,

and specifically with a loss of fish habitats and species. Natural recesses in the forested *phru* are important dry season retreats for fish. The decline in forest cover is also associated with an increase in the acidity of the waters and the soils. Loss of forest is said to lead to the drying out of the *phru* and therefore to increased acidity of the exposed soils. The Phru is said to have always had a tendency towards acidity, but more recently the general level of acidity has increased and certain areas that were only seasonally acidic are now permanently so.

Not all of the environmental change is attributed to the forest fires of thirty years ago. Nearly all respondents said that these fires changed the species composition of the forest cover, but environmental change has been within the last ten years. Regular small scale forest fires have continued, although their impact is limited by the enforcement of conservation regulations, and the extinguishing of fires by the Forestry Department. Even so, the area of *samet* (melaleuca) cover is said to have declined since the time it replaced the mixed forest thirty years ago. Much of the forest (or certainly the more accessible areas of the forest) is now comprised of relatively young trees which are said to be approximately seven years old. *Samet* is said by locals to grow very quickly, and is able to replenish areas lost in forest fires.

A variety of factors are believed to have combined to have affected the water flow, and thus the water quality and migration patterns of fish. Deforestation in the surrounding mountains is said to have increased siltation in the Phru into which the rain waters flow. The digging of a number of *khlongs* in the Phru and in Thale Noi, is also believed to have affected the hydrology of the Phru to such an extent that the flood waters now recede more quickly but in doing so leave a heavier siltation. With loss of forest cover, this sedimentation is prone to become dry and acidic.

There is much concern among fishers regarding the manner in which *khlongs* are dug. The RID has been active in digging *khlongs* throughout the Phru-Thale Noi region. The mechanical digging of *khlongs* has produced *khlongs* that are straight and wide, and thus accelerate the escape of the flood waters. This is contrasted with 'natural' canals that are less deep, less wide and follow a meandering course. The use of mechanical diggers (*macro*) in the construction of *khlongs* produces straight banks,

and with much of the surrounding vegetation removed. This is also argued to have destroyed fish habitats along the banks of the *khlongs*.

Construction of roads in the Phru and along its perimeter is also argued to have had an impact on water flow and migration patterns of fish. Many of these dirt roads are built as embankments, sometimes parallel to the course of waterways. It can be clearly observed in the Phru that these roads do indeed obstruct the flow of water. Although this can in no way be quantified in this study, there is a strong local perception that it has had a deleterious effect on the fishery. One of the major issues in management of an area such as the Phru is the definition of its boundary (cf. McCay 1978). Many of the local people who either come from surrounding villages, or who fish in different parts of the Phru, have a more detailed perception of the Phru as an integral feature of the wider floodplain. One elderly man in Baan Paa Sombuun was convinced that the construction of the main highway to the west of the Phru, some 30 miles from his village, caused the change in water flow, and the beginning of the decline of the fishery.

One of the most important issues to come out of local discussions is the level of uncertainty that is associated with environmental change. While there is always a degree of uncertainty when talking about the weather this is said to be a new feature of life in the Phru. While flooding could be expected to occur without any regularity people believe that formerly it was more possible to predict the timing of seasonal changes, levels of rainfall and to a lesser extent, yields of natural resources. In the same breath that it is frequently stated that the environment of the Phru has 'completely changed' (*bleon mot*), it is also said that one can no longer be sure of the seasons and rainfall; *'may day nae norn'*. In stark contrast to the quotes from the Taylor and Sons report, it is seen as a *recent* phenomenon that life in the Phru is subject to the vagaries of the seasons and of the weather. This clearly has profound implications for how people deal with the environment at the moment, and also how they view life in the future.

The ways in which environmental changes have affected the fishery of the Phru will now be illustrated in a more detailed discussion of the peak flood season of 1995.

7.v The Flood Fishing Season of 1995; 'The worst year ever.'

The period of the research covered the flood season of 1995; a time that was expected by locals to be the peak fishing season. The period of annual heavy rains and extensive flooding is a time when many locals who otherwise would not fish become intensively active in the fishery. It is a time associated with abundance as many of the animals that shelter in the Phru flee the rising waters. Many of those who work in construction also return to the villages to participate in fishing. The rainy season is also a time of least construction activity which further encourages people to return to the villages if some form of income is available. As the rainy season approaches there is a great deal of interest in how neighbours and friends are faring in their increasingly regular fishing trips. Talk of catch, species composition and size, gear used all dominate casual conversation.

Floodplain fish populations respond rapidly to the heavy rains of the monsoon (MRAG 1994). Continuous heavy rainfall for more than four consecutive days and nights is sufficient for the water levels of the Phru to rise causing extensive flooding. The rains of 1995 arrived slightly later than most people had expected, but was not in itself a cause for concern. When the rains did arrive, the rainfall was considered to be very heavy. There was a visible enthusiasm and optimism for the fishing season ahead. However, it soon became clear that yields were much lower than was considered to be normal, even in the much degraded fishery. In conversations with fishers in both villages it was agreed that yields for each year of the last ten years or so had declined from the previous year. However, the season of 1995 was universally declared to be the worst year ever; 'this year has the fewest fish ever' (*pii nii mii plaa noi tii sut*). It was also said to be a very poor season in Thale Noi. Several older fishers pointed out that 1995 was the first year that villagers had to buy fish in the flood season. In fact most of the fish on sale in Baan Glaang Phru were sea fish, and not locally caught varieties.

Not all people in the Phru were affected in the same way or to the same extent. Many people who were working outside the village came back to join in the fishing. After only a short time, most of these left the village to resume work in construction. One

of these, Jay had been looking forward to the fishing season. Only recently married and with one small child he was keen to be reunited with his family in the village. He did not like working in construction but considered that it was important to earn cash in order to set his family up with a house and basic material goods (fridge, fan, television, motorbike). After a few days back in the village he set off for Hat Yai to resume work in construction. Fishing could not compete with the daily wage of 150 Baht in construction.

For those with greatest pressures to accumulate cash, or for those with no other viable economic activities open to them, migration was the obvious response to the poor fishing season. The male heads of many of the families who had less than 2 *rai* of land also returned to the village expecting to be able to earn as good a living from fishing as they would in construction. All of these returned to construction work within a week. This was not a simple economic decision. Unlike Jay, these men were mostly in their late thirties or forties. They did not have the same pressures as newly weds but felt that they were increasingly being pulled away from the village and their families as they were unable to earn a living. While there may be some doubt as to whether the fishery has in fact declined in real terms (see MRAG 1994), the actions of local people in the fishing season certainly illustrate their own perception of a much degraded fishery. It should be pointed out that the daily wage in construction was 150 Baht (some more skilled workers were able to earn 200 Baht or more, but this was the exception). The price of prized species of fish such as *plaa chon* and *plaa duk* is between 40 and 60 Baht/kg. The equivalent of a daily wage in construction was therefore between 2.5kg and 4 kg. Considering that only fifteen years ago a daily catch of 20 to 30 kgs was expected, and that for most people a catch of between at least 5 and 10 kgs was expected for 1995, failure to earn more than 150 Baht a day from fishing indicates a significant decline in the catch.

The peak fishing season is one of the two commercial fishing seasons (the other being the *bor lor* harvest time). It is a time when most people expect to be able to put some money aside, to spend a little and to settle debts. For many this was not the case and put serious pressure on the household budget. The story of Pee Ae in Baan Paa Sombuun is a case in point. The youngest sister of the *Phuu* Yai Baan she is in her

late thirties, and married with teenage children. The pressure for cash income and the failed expectations for the fishing season were such that she left the village with her husband to work for four days in Hat Yai on a construction site with other villagers. That she had done so was a great surprise for me. Pee Ae and her kin are, by the standards of Baan Paa Sombuun, some of the wealthiest and most influential. Yet even they were not immune from the poor fishing season.

Many of the fish traders who came from Thale Noi or Cha-uat to buy fish in Baan Glaang Phru also believed the fishing season to be the worst ever. Even in Thale Noi, the catch of this year was lower than normal but the decline in catch was considered to be most severe in the Phru Khuan Khreng. One of the main fish traders in Baan Glaang Phru with whom I had many conversations also considered the harvest to be the 'worst ever'. Even though the price of fish per kilo had increased by between 25% and 50% he did not consider that this compensated for the decline in volume of catch and he left for work in Hat Yai.

For those with access to other resources or economic activities in the villages, the poor conditions of the 1995 season were a further lure away from the fishery. The lack of rain was a mixed blessing. For those with rubber plantations the lack of rain allowed them to continue tapping their trees. Many *grajut* collectors were able to resume their activities unimpeded by rain. The high water levels produced taller *grajut*, and the weather conditions allowed people to dry the *grajut* in the sun. The fishery is not felt to hold any economic future by those who are able to move into other cash-earning activities. As other activities become more market oriented, the opportunity cost of the time and labour becomes higher. Fishing is carried out only in as much as it does not interfere with other activities. Usually this means that gear such as *sai* are used, since they can be left in position, only needing to be checked once a day.

Despite the hardship that most people experienced, several others were able to cope and derive a sufficient income from fishing. All of these were people who considered themselves to be professional fishers, or particularly skilled. The capacity of some

fishers to cope with the poor conditions of the 1995 season are revealed in the cases of Nat and Somjai.

a) Case Study of Nat

Nat, a young professional fisher, was mentioned in chapter three. As a skilled professional, and as someone who has made a very deliberate decision to remain a fisher and a resident in the village, his experience of the fishing season is not common. The start of the fishing season was as poor for Norm as for most other people. However, he persevered and even felt that his own catch began to increase partly because many other people had abandoned fishing. However, Nat also displayed the greatest versatility and extent of experimentation with different gears and fishing sites. At the beginning he had used a combination of *gat* and *sai*. His catch was reasonable (*chai dai*) but not what it might be. He then started using more than one hundred *bet* placed during the evening. He also thought it necessary to use a different site each time he went fishing as he believed the fish were able to tell where he had placed the hooks. He still inspected the *sai* that he had already placed, but did not replace them or attempt to set them in different sites. Towards the end of the rainy season he was also able to fish for eels. With no competition and higher prices for his catch, he considered it to have turned out to have been one of his better years, despite his fears at the beginning of the season.

Most other fishers who persisted throughout the season increased the number of gear they were using (and therefore the time devoted to fishing), and/or reduced the mesh size of the *gat*.

b) Case Study of Somjai

Somjai is an older fisher who still considers fishing to be an important activity all year round. The greatest fishing effort is devoted to the rainy season fishing. For him the fishing season of 1995 was not the 'worst ever'. He could remember previous years

when the catch was lower but had noticed a steady trend of declining catch over the last seven years. This year he used two fishing grounds, one of which he had used for many years and one of which was new to him. He used 150 *sai* and 50 *gat* with a mesh between 5 and 5.5cm. However, his catch in the first four weeks of the rainy season (normally the peak of the fishing season) was very low. In the first four weeks he fished everyday but the average catch was between 1 kg and 3 kg of *plaa duk* (catfish) and *plaa chon* (snakehead). The catch of *plaa duk* and *plaa chon* remained constant but his catch of *plaa mor* increased from less than 1 kg in the first week to an average of 3 kg by the fourth week.

His explanation for this was comprehensive. He believed that the combined influence of deforestation, decreased rainfall and poor flow of water had led to increased acidity in the waters. This had an effect on the fishery as a whole. The extreme dryness of the dry season of that year had allowed for a higher than normal catch from the *bor lor*. But he regarded this to be a regular trend of the last four years. Although this year was less acidic than the previous year it was significantly drier. While most fish species decline in dry conditions, *plaa mor* are able to cope better than most species and their numbers actually increase relative to other species. However, the recent trend of prolonged extreme dry periods and increased acidity during the dry season, combined with the practice of *bor lor* in the Phru and the fishing of main waterways between the Phru and Thale Noi had significantly reduced the overall catch of the Phru fishery.

These two case-studies again illustrate the importance of a wide profile of resource activities that enable further experimentationa and adaptation. Such capacity and flexibility is required most in times of hardship and scarcity. Both Nat and Somjai had access to a range of gears and a variety of fishing grounds, and were also committed to (or merely able to) stay in the village for the duration of the fishing season. All of these factors represent significant advantages over other fishers. In 1995 this last factor was of the most significance. Despite the low yields at the beginning of the flood season these fishers argued that the yields greatly improved towards the end of the season (end of December/early January). However by this time the pressures to

earn a cash income were so great for most people that the majority had already left the villages.

7.vi Explanations for the poor catch of 1995

As with discussions of environmental change, explanations for the decline of the fishery point to environmental and human factors. However, these distinctions often become blurred. As will be discussed below, certain environmental changes have led to changes in livelihood strategies eg. the use of the refuge traps. This in turn has been associated with a further decline in the fishery. The conditions of the dry and rainy season have affected the accessibility and yield of the *bor lor*, which then in turn is argued to have affected the rainy season fishery.

There is a strong perception in the Phru and in Thale Noi that the degradation of the fishery is mainly attributable to environmental actors. The continued decline of the already degraded fishery is linked to continuing environmental changes, but also to responses to the fishery that further threaten its future and have a 'downstream' effect on other users of the fishery. The emphasis on environmental or human factors has important implications for the direction of policy.

Explanations for the decline of the fishery are based on an understanding of the processes of environmental change that the Phru had witnessed over the last thirty years. These have been detailed in an earlier section. The connection between the dry and rainy season and the fishing practices adopted at both times is discussed below.

a) The last three fishing seasons

The sequence of the last three years confirmed a clear local perception of a relationship between the dry and rainy season, and between fishing in the refuge traps (*bor lor*) and net and trap fishing. All respondents reported a general annual decline over the last seven or ten years. The last three years revealed even more important

changes. It was reported that two years previously, in 2536 BE (1993) there had been high levels of water all year round. In the dry season the waters had been low but had not been completely dry in the phru. This had meant that the water was not particularly acidic (*breow*) and that fish were found in abundance. At the end of 2536 BE and the beginning of 2537 BE the rains had been very heavy in the rainy season and many fish had retreated to the *phru* with many being caught in the *bor lor* (as well as natural pits) that had been dug there. By the dry season there were already a large number of fish in the *bor lor*. The extreme dryness of the dry season allowed easier access to the *bor lor* in the *phru* and nearly all people had enjoyed a high yield (A typical yield was reported to be in the region of 50 kg). It is believed that fish caught in the *bor lor* constitute a high proportion of the total Phru brood stock, particularly of species such as snakehead (*plaa chon*) and catfish (*plaa duk*). Consequently the fish had not had opportunity to breed and lay their eggs so that by the time the rains came the brood stock was very much depleted.

b) Effects of environmental change on the fishery

The level of fishing effort and the types of gear employed are considered to have contributed to the decline in the fishery. However wider environmental factors are considered to have had a greater influence on the decline of the fishery and that current fishing practices are a response to this earlier decline.

The main environmental features of the season of 1995 that troubled local people were the levels and quality of water. The problem of acidity of waters in the Phru does not affect all people in the same way. Water quality conditions are specific to particular often adjacent areas. Some respondents reported that 1995 saw the most acidic waters ever, while other people reported that the waters were still fresh (*jeut*). At the north of Baan Glaang Phru most respondents reported that the waters were fresh (*jeut*). It was in this area that most of the snake skin gourami (*plaa salid*) were caught. Several people pointed out that not only can the quality of water vary from place to place even on a small scale, but that the water quality can vary from the surface to the bottom. Many respondents reported that although the water on the

surface was fresh, the water at the bottom was still acidic. This unusual phenomenon was explained by recourse to understandings of water flow, deforestation and increased siltation.

In 1995 it was reported that although the rains were heavy for a few days at the beginning of the rainy season and that it flooded extensively at this time, the waters soon receded. This left the water acidic (*breow*) in many places, but also stinky (*men*) and rotten (*boey*) in others. Several explanations were offered. Drainage from the Phru had been improved by the re-digging of several *khlongs* (see map), but was not considered to be even. This meant that water draining from the Phru, particularly eastwards, could do so more quickly. However, processes of deforestation in the *phru* and on the surrounding mountain ranges had brought an increased volume of siltation (*khlongdom*) that had settled in the *phru* and had not been able to drain away with the main waters. Deforested areas had high levels of grasses remaining in the waters that were not washed away in the floods and rains and were left rotten and decomposed. In such conditions fish cannot survive and many that were caught using *bet* and *gat* were rotten and inedible by the time they were collected in the mornings. This was the first year that this phenomenon had been reported.

7.vii Responses to the Decline Case study of *bor lor* and aquaculture

One of the dominant features of changing livelihood strategies in the Phru and of responses to these changes is greater human involvement in the management of resources. Previously the livelihood strategies of most local people were characterised by diversity, simplicity of technology, and minimal refashioning of the environment. People attempted to respond to changing environmental conditions of different seasons and balance their resource profiles appropriately. With the overall decline of the natural resources of the Phru, and greater market involvement, more interventionist livelihood strategies have been adopted. The '*reey reey*' attitude of former times is increasingly less viable. At the same time, development initiatives of the state have stressed the capacity of human management of the Phru in order to overcome the vagaries and uncertainties of seasonal changes. This is a feature of

development more generally in Thailand (see chapter four) and is further manifest in the Phru with the RID's plans for building a reservoir around the Phru (see chapter eight).

At the micro level, greater intervention in the fishery can be seen in the locals' uptake of the *bor lor* and in the DOF's promotion of aquaculture. Both the *bor lor* and aquaculture are responses to a perceived decline in the fishery (as has been mentioned the *bor lor* is also considered to be a cause of further decline). Both require more human intervention in replicating and managing the environment of the Phru. Yet there remain significant differences that reveal how local and outsiders understand the environment of the Phru and in the type and extent of human intervention that is viable. These are based on environmental and economic considerations. An important environmental aspect of this in the eyes of local people is the concept of '*thammachaat*'; a concept taken directly from the dominant discourse of environmentalism but employed by local people in such a way to legitimise their own knowledge and actions.

A distinction is often drawn between aquaculture ponds that required stocking and feeding and the *bor lor* which were left alone. Aquaculture ponds were widely referred to as '*bor liang*'; literally, 'rearing ponds'. Refuge traps however are referred to as '*bor thammachaat*'. A *bor thammachaat* replicates the ponds found in the *phru* to which fish retreat and requires no inputs of time or labour. This distinction not only illustrates the different ways the ponds and fishery are seen but also illustrates a significant feature of how the concept of '*thammachaat*' is understood, and how the appropriateness of economic activities is often interpreted. The two main factors in determining whether an action is *thammachaat* or not is the extent to which it replicates natural (ie. non-human) phenomena and the extent to which direct human intervention is required. This clearly has implications for economic activities more generally. The concept of '*thammachaat*' has such powerful connotations that ideal economic activities are those that not only fit with the natural processes of the Phru as interpreted by locals, but also those which require minimal intervention, minimal inputs and minimal ties with markets and outside authorities.

The promotion of aquaculture forms the linchpin of DOF policy to ameliorate the effects of declining marine and freshwater fisheries. The potential of freshwater fisheries, for so long overlooked in preference to marine fisheries, is now almost solely seen in the context of their potential for freshwater aquaculture (DOF Phattalung undated). In many ways this is a tacit recognition of the DOF's inability to halt the processes of environmental change that have led to declining freshwater fish stocks. It is also a recognition of their technical capacity to introduce aquaculture into fishing areas. Many local people also see aquaculture as holding great potential if it were to be promoted with government assistance. Indeed, much of the discussion about the future of the fishery among local people concerned the ways in which some form of 'aquaculture' could be taken up in the Phru.

a) The Special Project and *Bor Lor*

Rearing of fish and the use of refuge traps has been carried out in the Phru and surrounding areas for a great many years. A seasonally inundated pond next to the homestead or in the corner of a rice field is a familiar feature throughout Thailand. Several local people have experimented with different forms of semi and intensive aquaculture.

A pilot integrated aquaculture project was launched by the Special Research Institute (see note 1) and the DOF. The project intended to combine the rearing of fish with chickens and the collection of *grajut*. Aquaculture is regarded by DOF officials at all levels as holding great economic potential for the Phru. Baan Glaang Phru was selected as an appropriate site. However, the environmental conditions of the Phru present particular problems for aquaculture. The highly acidic waters are unsuitable for most species of fish, particularly the favoured aquaculture species such as tilapia (*plaa nin*). Economically a system of aquaculture and organisation is required that maximises economic benefits without impinging on local people's time, and without requiring prohibitive levels of inputs and investments.

The Special Project was intended to be a pilot to test the feasibility of aquaculture in Baan Glaang Phru. It was greeted with a great deal of local enthusiasm at the time. Not only did it offer the possibility of a new source of income, but also indicated the willingness of the government to offer assistance to the village. The project also generated a great deal of interest in neighbouring villages.

Ten ponds were dug on land in front of the temple and adjacent to one of the main *khlongs*. A central area of each pond was dug slightly deeper so that *grajut* could be planted. A small chicken coop was to be built by the groups of local people who were to co-operatively manage each pond. The coops extended over the ponds so that chicken waste would fall from the coops into the water. It was hoped that the chicken waste would fulfil the duel function of providing food for the fish in the ponds and of lessening the acidity of the waters. Each pond was to be run by groups of between 10 and 12 local people. Many people were interested in the potential of aquaculture but were reluctant to risk time and money on an uncertain venture. As one man said it was better to wait and see how the project faired. Each group was responsible for supplying the materials and for building the chicken coops. Individual outlay was in the region of 2000 Baht. Each group comprised neighbours and friends.

The project never got off the ground. No government officials were prepared to discuss the project but in several meetings with DOF officials (and sometimes with officials of other organisations) reference was made to the project's success. In one meeting with provincial and district level DOF officials, the project was referred to as showing the way for future fisheries management in the Phru. The only information concerning the project was available from local people. Inevitably their perceptions are somewhat prejudiced. The way the story unfolded was that after the ponds had been dug and filled with water each pond group continued with construction of the chicken coops, awaiting the DOF to arrive and release the fish. Two versions of what happened next were offered. In one version, the DOF arrived from Cha-uat to test the water. On testing the water they announced that it was too acidic and that fish could not survive. In the other version, the DOF released some fingerlings (less than 1000) but the fish were very small and did not survive. The conclusion was the same. The fish were never released in the ponds and to this day no form of aquaculture has

been carried out in the ponds. A group of involved villagers petitioned the *phuu yai baan* to make a protest with *pramong amphur* (District Fisheries Officer) in Cha-uat. This the *phuu yai baan* did but shortly afterwards the *pramong amphur* was relocated. No other DOF official has taken up the case.

The issue of political responsibility for the failure of the project will be taken up later. At the moment it is sufficient to say that the failure of the project has soured the already tense relations between government officials and villagers. It has also raised some doubt as to the efficacy of specialised knowledge of the government. The initial idea of aquaculture was at the time of the project considered by local people to be of great potential. The knowledge of the fishery upon which it was based did not conflict with existing local understandings. One middle-aged widow who had been active in the aquaculture groups seemed surprised when I asked her what she thought of the idea for the project when it was first presented to her. I was keen to know if the principle of aquaculture conflicted with her own understanding of the fishery. Her answer was revealing.

> "Who am I to question these people? When they first came there were DOF officials, and academics from the university. These are knowledgeable, educated people who have studied these things for many years. I am just a simple country woman. I don't know about these things and if such people come to tell me how to raise fish it is not for me to challenge them. " (Oy Baan Glaang Phru).

Oy expressed a commonly held sentiment concerning the relationship between rural people and government officials. Debate between rural people and government officials is rarely on an equal footing (cf. Lohmann 1995a, Rigg 1991, Vandergeest 1993a). Having official status coupled with formal knowledge commands respect and deference from rural people. Teachers and academics from universities command a great deal of genuine respect. Often rural people do not understand the language and concepts of outside experts, but assume that there must be some genuine foundation for such experts' claims to specialist knowledge. This is even more so when experts are associated with a 'special project' (see notes). Local people do not feel

comfortable making public challenges, particularly in the formal and unfamiliar settings of official meetings. This can even be witnessed when the opinions of the 'experts' are considered not to make any sense. Indeed the formality of these forums can be interpreted as actively discouraging meaningful exchange.

Local explanations for the failure of the project (considered a success in official circles) were constantly offered. It soon became clear that local people themselves were not sure why the project had failed, and were keen to salvage the project for themselves even if the DOF gave them no support to do so. The political dimension was widely referred to and allegations of corruption abounded.

Most people were still assessing the concept of aquaculture. Despite the high acidity of the waters in the Phru it was felt that something could be done. Local people's experience with the *bor lor plaa* was their starting point for comparisons with aquaculture. Most people's judgement on the aquaculture project revealed similar perceptions. Firstly, the choice of fish species to stock the ponds was questioned. The snake skin gourami (*plaa salid*) is widely reared in Thailand but is not one of the main indigenous species in the Phru. Nor is it well known in the surrounding region, nor is it widely available in fish markets. Its relatively low price (ca. 25 B/kg) reflects local demand and tastes. Although *plaa salid* is sometimes caught in the Phru it is only caught in certain areas. Local people argue that *plaa salid* requires fresh water (*nam jeut*) more than most other types of fish found in the Phru, and *plaa salid* is unable to tolerate the acidic conditions of much of the Phru. One elderly informant said that *plaa salid* has only recently come to the Phru. It constitutes a very small proportion of the catch, and many fishermen did not catch any *plaa salid* in the 1995 season. *Plaa salid* is also said to be carnivorous so that other species of fish cannot be reared in the same ponds. However when reared in ponds it does not require heavy expenditure on foodstuffs (unlike *plaa duk* or *plaa chon*).

The way in which the ponds were dug was also argued to be responsible for the failure of the project. The area in which the ponds were to be dug was considered by local people to have been an area of freshwater at the time of the project. Indeed it is still considered to be an area of fresh water and the *khlong* near the entrance to the

project remains fresh. However, the ponds are argued to have been dug too deep and at the driest time of the year. By turning over the earth in the peak of the dry season and by digging deeply the soil is more likely to become oxidised and therefore acidic. By the time the ponds were full the soils and the water were highly acidic with a PH level of between 2 and 3.

An important factor that is believed to affect the level of acidity of water is its ability to flow freely. As was mentioned in the preceding discussion, increased siltation and poor quality of some *khlongs* have combined to increase the acidity of the waters. It was suggested that the waters in the project ponds maintained this high level of acidity as there was no water flowing between the ponds and the surrounding *khlongs*. It was a source of surprise that the project had not appreciated the significance of water flow to water quality, and that once the ponds had been constructed this problem had not been rectified.

The local knowledge of the Phru and its fishery as manifested in the ways in which the *bor lor* are used presents an intriguing contrast to the aquaculture project. Locals discussed the potential for future development of aquaculture based on their knowledge and innovations in use of *bor lor*. There are two main forms of *bor lor* found in the Phru. It is common for those with sufficient seasonally inundated land to dig a pond near their homestead. Fish become trapped in the flood season and are harvested in the dry season. It is common for these ponds to have fruit trees planted along their banks. This is not only a rational utilisation of limited land but also a means of providing shelter from the sun for the fish, and a means of attracting flies and other food stuff for the fish. As many respondents commented, it makes the *bor lor* more '*thammachaat*'.

However, most *bor lor* are found in the recesses of the *phru*, either in clearings among the *samet* trees, or else in the grassier areas of the *paa so-nguwan*. If the *bor lor* are in the *phru*, the *bor lor* mimic the dry season retreats that fish seek out as the flood waters recede. The harshness of the conditions of the Phru means that these *bor lor* are simple ponds that are dug and then left. The *bor lor* that are dug in the grass areas tend to be more carefully dug. Often they are next to the *khlongs*, and more

effort is required to ensure the flow of water once the *bor lor* are filled. A recent innovation to combat the high levels of acidity associated with poor water flow, is the use of meshed gates that join the *bor lor* to surrounding water bodies.

The catch from the *bor lor* is highly variable from pond to pond, and in some cases, from year to year. Even ponds that are in close proximity may contain very different catches. For example, one pond yielded no fish at all, whereas a neighbour's pond, only ten yards away, yielded over 50kg. The variation in yield is revealed in the catch from the following three ponds. All three were dug three years ago in the *phru*.

Bor Lor Plaa No.1

Width 4 m Depth 2m Length 90m

Chon	*Duk*	*Mor*	*Gradii*	*Salid*	*Chalaat*
80 kg	60 kg	5kg	3kg	2kg	30kg

Bor Lor Plaa No.2

Width 4m Depth 2m Length 20m

Chon	*Duk*	*Mor*	*Gradii*	*Salid*	*Chalaat*
22kg	15kg	8kg	3kg	2kg	40kg

Bor Lor Plaa No.3

Width 2m Depth 1.5m Length 20m

Chon	*Duk*	*Mor*	*Gradii*	*Salid*	*Chalaat*
20kg	2kg	3kg	2kg	0.5kg	1kg

The main explanation for the varying catch from similar *bor lor* is to do with the siting of the ponds, their size and the strength of the walls of the ponds. These factors

favour those who dig *bor lor* with the aid of a *macro*, and who are able to dig the ponds in what are considered to be natural pools in the *phru*. These pools are where the fish retreat in the dry season.

There is a growing realisation within the villages that the widespread use of larger and more efficient *bor lor* is having a deleterious effect on the overall fishery. It is felt that the current availability of a *macro* (for those that can afford the hire fees) has enabled people to dig larger, deeper and structurally more secure ponds. At the same time it is felt that general environmental degradation has reduced the number of fish retreats so that the majority of such retreats are actually *bor lor*. Thus when the *bor lor* are harvested a large proportion of the brood stock is removed.

The above explanations were held by those heavily involved in the use of *bor lor* as well as those not involved. Those who are most involved in the use of *bor lor* are those with land and capital (or in some cases, simply the influence). For many others, particularly those without land, capital or influence *bor lor* were of less importance to overall livelihood strategies. However, it was frequently stated that those who benefited most from *bor lor* were not only from the richer and more influential sections of the village, but were also those that had least involvement in the fishery otherwise. Indeed, in many interviews respondents would say that they were not professional fishermen, and did not even fish for subsistence. The use of *bor lor* is seen as a different activity and certainly is not seen as a form of fishing.

Despite the current uneven involvement in *bor lor*, the practice of *bor lor* was universally believed to be evidence of the superiority of local knowledge as opposed to that of the experts involved in the Special Project. As one informant expressed it;

> "*Bor lor* comes from the *chaow baan* (villagers) ourselves. No-one came here to tell us how to do it. And it works. Look how many fish we catch. Now go and look at the Special Project and tell me which is better." (Ae)

Rather than legitimise the authority of the state to define and provide development for villagers, such projects undermine the authority of the state and booster the self-confidence of local people. It also generates further resentment of the state. People do not speak out in formal meetings but this should not give the impression of aquiescence. The formality of public meetings between villagers and government officials purposively restricts meaningful dialogue and participation. While aware that they do not hold formal knowledge gained from formal education, villagers do not believe themselves to be ignorant. There is a wealth of local knowledge and skill that local people are aware of themselves. Individuals are singled out because of their specialist knowledge regarding all manner of topics, such as fishing, plant species, or local medicine. However it is felt that this knowledge does not gain the respect of outsiders. One informant frequently argued that lack of knowledge was one of the main problems for villagers. He continued by explaining that formal knowledge would give villagers credibility in the eyes of outsiders, and allow them to be better able to defend their own interests. A formal education is respected in the villages not solely because it signifies genuine knowledge, but also because it allows for more gainful employment.

Many discussions were held concerning the relative merits of *bor lor* and of aquaculture. It was felt that the *bor lor* were effective but were clearly limited to one short season. It was also becoming increasingly apparent that the catch from the *bor lor* was having an effect on the brood stock in the Phru, and that a good harvest in the *bor lor* would lead to a reduced catch in the flood season. Aquaculture held more long term potential but still had many problems. Two interviewees in Baan Glaang Phru had experimented with their own form of aquaculture, without any external assistance. One had dug two large ponds on his own land adjacent to a freshwater *khlong*. He had stocked the ponds with approximately two thousand fingerlings of *plaa duk* that he had caught himself from his own *bor lor* in the *phru*. His experiment in aquaculture had necessarily been low-input, and with no technology. All the fingerlings had died within a few weeks. On reflection he said that the experiment was worthwhile but that for it to be successful would require greater expenditure on construction of the ponds and on feed.

Lack of access to credit and resources of land were the main impediments to the uptake of aquaculture for the majority of people. One other villager was experimenting with aquaculture during the fieldwork. He was a successful businessman who had made his first money from rubber and had then managed to diversify, even to running a motorcycle taxi firm. He had constructed two ponds on land that was not acidic, and stocked them with *plaa duk* fingerlings that he had caught himself or had bought from other villagers. He had also installed a number of lights both for security and to attract flies for the fish to feed off. However, the most significant feed was chicken feed that he had bought. He was very nervous of being robbed and highly suspicious of other people's interest in the finances of his business. As a result I was unable to probe the detail of his business. However, his activities attracted a great deal of local interest and were the subject of many conversations. Significantly it was felt that the profit from selling the *plaa duk* hardly compensated for the effort and risk involved in what was perceived to be by local standards a highly capital intensive activity.

Despite these two unsuccessful cases of aquaculture, there was considerable interest in the possibilities that aquaculture might offer. However, it was realised that the intensive forms of aquaculture (particularly rearing the high priced plaa duk) as increasingly practised in other areas of Thailand would not be viable without financial assistance from the state. It was also repeatedly stated that lessons needed to be learnt from the Special Project. Indeed many of these conversations occurred on the edges of the Special Project ponds.

b) Reserves: Fish, Water and Trees

As part of the dissemination of the ODA fisheries project, a series of meetings were held with the DOF at national and local levels. In January 1995 during the peak flood fishing season, a public meeting was held at Thale Noi in order to present and discuss the findings of the research to local fishers. The meeting was organised by CORIN and a local NGO, *Lae Dtai (*Look South*)*. Of the forty or so participants the majority were from Thale Noi. Most of these were not from fishing households, but were

representatives of the more influential families from the main *muubaan*. Of the fifteen people from the Phru, half were from Baan Paa Sombuun and were all known regular fishers. The remainder were from Baan Glaang Phru and comprised regular fishers including four *glum anurak* workers.

A brief summary of the research findings was presented. Speaking in Southern Thai representatives of CORIN and *Lae Dtai* explained how the research was carried out, what data was collected, and what conclusions were drawn. These centred on the biological and distributional effects of restrictions on certain gear types as discussed in chapter six (Heady et al 1995). However, it was clear that this type of modeling was not the primary concern of those present. It was an unfamiliar way of assessing the biology and economics of the fishery. More importantly the policy options discussed (ie. of restrictions on the use of certain gears) were not regarded as appropriate. As was later revealed in private discussions, it was felt that restrictions on specific gear types would lead to surreptitious use, rather than abandonment of that gear. Further more, fishers in the Phru believed that a restriction on gear that is widely used in Thale Noi would lead those fishers to continue fishing in the Phru where fishing leglislation is not enforced, and where detection of transgressions is more difficult.

The meeting then proceded towards a more general discussion of problems associated with the fishery, and potential solutions. At first the meeting was dominated by a few influential people from Thale Noi. The problems of the fishery were largely those exclusive to Thale Noi; changes in salinity and drainage as a result of irrigation projects, lowering of water levels, the profusion of water hyacinth. Overfishing on Thale Noi was not identified as a major problem, although illegal fishing was. The environmental decline of the Phru and the use of *bor lor* was however identified as a factor in the decline of the Thale Noi fishery.

At the stage of identifying problems, the discussion continued to be dominated by three influential people from Thale Noi. This is a common feature of public meetings in rural Thailand. Those with status and influence are able to dominate discussions and present their own opinions and interests. Only one person, a teacher from Baan

Paa Sombuun, spoke on behalf of the Phru. As a teacher he commanded respect and status to enable him to speak publicly. He dismissed suggestions that the *bor lor* were a major contribution to the decline of the fishery, and instead suggested that they were a necessary response of poor people in a degraded fishery, receiving no outside assistance. Gradually some degree of consensus emerged with the weight of opinion suggesting that environmental change, including that in the Phru, was more significant in the decline of the fishery than overfishing. This also supported the view of the original ODA research (see Heady et al 1995).

The recommendation that gained the most support, especially among the Phru was for the establishment of reserve fishing grounds. A reserve area has been tried on Thale Noi but with mixed success (see Masae 1996). The explanation of the role of *bor lor* in reducing the catch of the 1995 season highlights the importance of fish retreats in the *phru*, and of the relationship between fish, trees and water. According to local opinion, the drying up of the *phru* has meant that there are less natural ponds for fish to retreat to, and a higher proportion of the ponds that fish do retreat to are actually *bor lor*. Given the use of *macro* and *khruang sup* these *bor lor* are becoming more efficient in catching a large volume of fish. However, it is said that the use of *bor lor* would not have such an effect on the overall fishery if the wild fish habitats had not also been degraded. Reserve areas in the *phru* would be a means of rehabilitating the *phru* forest, and of creating protected fish retreats.

The discussion of reserve areas in the Phru raises problems of ownership. In contrast to aquaculture, reserve areas would need to be established in the areas to which fish retreat in the dry season; ie. in the *phru*. The reserve areas would need to be close enough to communities to allow for monitoirng and exclusion. Since most of the *phru* is reserve forest (*paa so-nguan)*, establishing fishery reserves would amount to handing over authority for large areas of the *phru* to local communities. As will be discussed in the following chapter, the concept of reserve fishing grounds and of community forests is not in principal opposed by state authorities (cf. Somjai 1994, Pierce et al 1992). However, there is an ongoing debate that hinges on who should have ultimate authority over community resources. Again this is not simply an issue

of environmental rehabilitation and management, but access and control over resources.

The meeting at Thale Noi further indicated that the agenda of local fishers has a different emphasis than that of the DOF. However, it also illustrated the different perspectives of the communities of the Phru, and challenged notions of community itself. After the meeting, many of those from the Phru complained that the participants from Thale Noi did not depend on fishing, and that their opinions could not be taken seriously. However, it was also felt that outsiders would give more weight to the opinions of those from Thale Noi, as Thale Noi always gained precedence over the Phru.

7.viii Conclusion

Interpretations of environmental change are influenced by individual's economic position, and their relative dependency on environmental resources. In their attempts to earn a living, people in the Phru are engaging with a physical environment and increasingly with a market environment. The one influences the other. Both these environments are changing so that people's assessments of the viability of involvement in one rather than the other are also being adapted. Consequently there are diverse interpretations of the environment of the Phru.

The significance of the decline of the fishery is again partly influenced by perceptions of the viability of alternative economic activity. For those who have been able to move from fishing to more productive economic activities, the decline of the fishery is of less importance than for those who continue to depend on the fishery. This capacity to move into more productive activities is the main determinant of perceptions of the fishery.

Environmental change is perceived in two ways. If the environment is interpreted to mean the non-human, natural environment it is often seen as having deteriorated. If, however, it is seen as the material world around people it tends to be seen as having

improved greatly. However, it is also universally acknowledged that the environment of the *phru* commons has greatly deteriorated, and that a subsistence living derived from the *phru* is more difficult. At the same time resource use in the Phru is more closely associated with the market. For those who have been able to benefit increased market involvement has generated significant wealth (by local standards). For those unable to participate fully in this intensified market activity, the increased difficulty of finding a subsistence living from the *phru* has drawn them away from the Phru Khuan Khreng. Many of these disadvantaged can now only see a future of construction work in remote cities.

Notions of *singwaetlom* and *thammachaat* are prominent in local people's understanding of appropriate responses to changing environmental and socio-economic conditions. The shift from a subsistence economy based on multiple resource use towards a market-oriented economy has also required more direct human intervention in the management of the environment. Non-interventionist resource use was frequently described as being natural (ie. *thammachaat*), and by implication good. This was revealed in local discussions contrasting the *bor lor plaa* with aquaculture. While a comfortable physical environment is clearly desirable, there is an understanding that strategies to manage environmental resources should fit in some way with what are perceived to be natural phenomena. There is a great deal of diversity in how this fit is being interpreted. While problems are acknowledged with the *bor lor plaa* (ie. the long term effect on the brood stock) it is clearly seen as an important manifestation of local knowledge. The failure of the aquaculture project is very much a result of ignoring local knowledge. But this is not an ideological rejection of science and technology. There is still a strong sense that local knowledge and skill could recapture the aquaculture project and make it viable. However, it would also require state assistance.

State explanations for environmental degradation and policy recommendations at the local level are framed in terms of local responsibility and small-scale technical solutions. The emphasis placed on aquaculture is a tacit recognition of the difficulty of rehabilitating the wild fishery, and the need for specialist knowledge. Aquaculture cannot easily be fitted into the existing physical environment or into local livelihood

strategies. It requires significant investments of capital, labour and time. Even if successful, aquaculture could only ever hope to be one component of a wider resource profile. The discussion of *bor lor* and aquaculture reveals local understandings of the relationship between forests and water, and the potential for environmental conservation based around reserve forest-fishing-*grajut* areas. However, if the knowledge upon which *bor lor* are founded were applied to the establishment of reserve areas in the *phru* as local people suggest, this would amount to a handing over of ownership of the *phru* to the local communities. Ultimately, issues of environmental management deal with ownership of natural resources. This is especially true for the poorer sections who depend the most on *phru* resources. For them, the most important environmental problem is that of access to productive resources.

CHAPTER EIGHT

THE STATE AND MACRO-LEVEL MANAGEMENT OF THE PHRU

8.i Introduction: Conservation and Development

The villagers of the Phru Khuan Khreng are no longer the sole managers of the Phru. Increased state involvement has brought in a range of state agencies and government officials, each with their own interests and objectives. Policy initiatives are not only aimed at small-scale projects such as the Special Aquaculture project, but also at macro-level management. At this macro-level, freshwater fisheries are only a minor concern. Other developmental and conservation concerns now guide macro-policy towards Phru. This neglect of freshwater fisheries is in itself an important feature of state constructions of the Phru environment and economy.

At the macro-level state policy towards the Phru reveals many of the tensions discussed in chapter four. State policy is shaped on the one hand by conflicting national and regional development interests, and on the other, by conservation interests. Conflict is not only between local and regional interests, but also between government departments.

The Phru is being reinvented, and is no longer being discussed as the marginal wasteland of former times. Current management proposals for the Phru draw on contrasting notions of its 'nature', and subsequently of its development and conservation potential. Fresh water supply needs as defined within national industrial development objectives have partly inspired the RID Reservoir Project for the Phru (as with the Songkhla Lake Basin Barrage project). However, these plans conflict with forest and waterbird conservation interests, as manifest in the Thale Noi Non-hunting Area. In contrast to the RID, conservation interests now present the Phru Khuan Khreng as providing vital ecological functions in its existing state. The Phru is argued to be an important habitat for waterbirds (Parr 1994), providing important functions in terms of hydrology and biodiversity (CORIN 1994). Melaleuca (*dton samet*), the tree species that dominates the Phru, has also been reinvented as a species

of value and worthy of conservation (Maltby et al 1992, Anond 1997). As the largest melaleuca forest in Thailand (Scott 1989) the Phru Khuan Khreng is argued to be a valuable conservation site.

The management initiatives that are discussed in the following sections all depend upon interpretations of the natural functions of the Phru and how it fits in with the wider ecology of the Lake Basin, particularly to the Pak Phanang river, the east coast (Amphur Ranot and Hua Sai), and to Thale Noi. They also depend on interpretations of national and regional development interests.

With increased state involvement in the Phru the political links between the state and the villages take on a new level of importance in influencing local livelihood strategies. Of all the external influences acting on the Phru, it can be expected that the influence of the State will be the most significant. This chapter will discuss the main management initiatives aimed at the Phru as a whole ie. the RID irrigation reservoir project, National Park and Ramsar site status, and community forestry. These reflect differing interpretations of the ecological value and 'natural' potential of the Phru. They also reflect notions of community; ie. of the relationship between rural society and its resource base, and of the relationship between state and rural people. Underpinning different strategies to manage the Phru are issues of what the Phru is and of who 'owns' the Phru.

8.ii State Management Proposals

State policy initiatives towards the Phru differ according to the particular interests of specific government departments. Competition between these interests forms an important political context in which policy decisions are made. For example, defining the Phru as primarily being a forest hands over jurisdiction to the RDF. Defining the Phru as a fishery or a natural reservoir similarly implies the authority of specific departments ie. the DOF or RID. The institutional competition between government departments in Thailand has been described as 'empire building' (Rigg 1991) in which each department and section fights for influence over its own constituency (Rigg

1991, Tongsawate and Tipps 1988). Authority of these agencies to act independently in the Phru is uncertain and has been a cause of conflict, for example between the Forestry Department and the Irrigation Department.

The Phru lies within the boundaries of three provinces (Songkhla, Patthalung and Nakhorn Sri Thammarat), and provincial level departments have also operated in the area of the Thale Noi Non-hunting Area. This confusion of responsibilities is identified as a potential impediment to successful management of the Phru as a whole. Ultimate authority to allow state projects in the Phru lies with the Office of Environmental Policy and Planning (OEPP) which also acts as secretary on the Songkhla Lake Basin Planning Committee. The OEPP assesses the environmental impact of proposed projects and works in order to ensure environmental sustainability by encouraging the " integrated use of natural resources and decrease conflict of natural resource use " (OEPP Official pers comm. 1995). Integrated natural resource use also requires co-ordination of small scale development projects. Indeed the proliferation of small-scale projects in and around the Phru is identified by the OEPP (and the Conservation Group) as one of the main obstacles to effective management. Both the RDF and OEPP regard themselves as the keepers of the Phru, but both also feel unable to exert their influence in all cases.

Specific OEPP interpretations of the environmental and economic condition of the Phru, and proposals for its management will be discussed later. While the OEPP has legal authority to manage the Phru, OEPP officials I interviewed expressed their personal feelings that the OEPP had a limited voice, and was on the whole only able to block the large-scale proposals of other projects. The interests of the OEPP lie most closely with those of the RDF Conservation Group based in Thale Noi. Indeed, during the course of interviews, many officials from other government departments expressed similar interpretations of the Phru. However, the projects discussed below reveal the diversity of interpretation of such vague concepts as 'environmental conservation' (*anurak singwaetlom*), and also of interpretations of rural life and the appropriate political relationship between rural people and the State.

8.iia) The Phru Khuan Khreng Water Resources Development Project

The project that would require the most dramatic human intervention in the management of the Phru is the Phru Khuan Khreng Development Project of the Royal Irrigation Department (RID). It is a project that has aroused much popular interest and was the subject of many discussions with local people. The most comprehensive biological and socio-economic study of the Phru Khuan Khreng was undertaken as part of the environmental impact assessment of the irrigation project (CORIN et al 1994). At the time of writing it was widely believed by those involved in the EIA and government officials that the project would not go ahead because of fears and uncertainties surrounding negative environmental impacts. However, no official announcement has yet been made and locals from both factions looked forward to the project either with enthusiasm or anticipation.

The project was based on an interpretation of the Phru Khuan Khreng as a 'natural reservoir'. The project intended that an earthen dike was to be built around the Phru to store water, and a series of canals and drainage gates to channel the receding waters out of the Phru for use in irrigation in surrounding areas (see map 2). The objectives of the project are outlined as follows:

> " 1. To develop Phru Khuan Khreng as a seasonal water storage for irrigation in the cultivated area nearby and the lower part of the Pak Phanang River Basin.
>
> 2. To mitigate flood damage to Pak Phanang River Basin.
>
> 3. To integrate the utilization of the Phru Khuan Khreng swamp with proper and suitable resource and environmental management.
>
> 4. To utilize the stored water for the purposes other than irrigation such as repelling of salt water intrusion and waste water from shrimp farms.

5. To use the stored water for solving the critical problems occurring in the Thale Noi and upper portion of Songkhla lake.

6. To educate people for the sustainable utilization of the swamp" (CORIN & Kasetsart 1994a)

It was envisaged that the seasonal fluctuations in water levels could be humanly managed so that water could be stored and released for irrigation from March to June (CORIN a 1994). The reservoir would:

> 'allow for vegetation survival, the water will be allowed to recede naturally to ground level before the reservoir being filled up again in the next rainy season in October. This will simulate the present flooding pattern in the swamp' (CORINa 1994 p.A2)

However, the report of the EIA concluded that although the reservoir might provide irrigation water resources for the Pak Phanang and Ranot regions (see map), the adverse effects on the water quality of the Phru and of Thale Noi would be too severe. The main objections are that the dike would impede water flow from Khlong Cha-uat and thus impede water circulation in the Phru. Such water circulation, as many fishers observed (see chapter six) is essential in order to maintain water quality. The dike to the south of the proposed reservoir would also impede water flowing into Thale Noi and would have 'a severe adverse impact on the Thale Noi delicate ecosystem' (CORIN a 1994 p.A19). Indeed it is the uncertainty of the effects on Thale Noi, and the uncertainty of the relationship between Thale Noi and the Phru Khuan Khreng that is the cause for greatest concern. The report therefore recommends a series of mitigation procedures, and further studies. This reveals an important dimension to the way in which the Phru was represented in this project, and the ambiguity of the ways in which representations of the environment are constructed. Much of the opposition to the project centred around conceptions of a wetland. Such intervention as the reservoir project involved would irrevocably change one of the few remaining wetlands in Southern Thailand. However, definitions of a wetland and how its borders should be drawn are highly contentious.

It is clear that the above project was motivated by the supposed need to supply fresh water to rice farmers of the lower Pak Phanang, and to shrimp farmers of the east coast. The interests of inhabitants of the Phru itself were of secondary importance. In this way, the Phru was presented as an ecological component of the Pak Phanang-Ranot ecosystem *rather than as a part of the Thale Noi-Thale Luang ecosystem*. The arbitrary definition of boundaries of ecosystems is of crucial importance (cf.McCay 1978). Much of the opposition to the project as presented in the Executive Summary of the EIA was based upon the negative effects on the Thale Noi ecosystem as well as upon the ecosystem of the Phru itself. By interfering with the water flow in the Phru and between the Phru and Thale Noi both the Phru and Thale Noi would be adversely affected. In this light, the Phru and Thale Noi are presented as two parts of one system. As will be discussed later, more radical interpretations of the Phru place it as part of a unified, discreet ecosystem that stretches from the Pak Phanang to the mouth of Thale Luang. Definition of the boundaries of the ecosystem clearly has profound implications for its management.

The proposed project and the ensuing debate raised the profile of the Phru Khuan Khreng, and of potential management options. At the heart of these discussions were different interpretations of the innate natural condition of the Phru and its environs. The change in forest cover had until the recent rediscovery of the value of melaleuca, been a major cause of the Phru's relative neglect. As was discussed in chapter three, the dominance of melaleuca prevented the Phru from being classified as a 'true peat swamp forest' and thus suffered the relative neglect, compared to the Phru Do Daeng (Thawatchai and Chawalit 1985, Immirzi 1996). Interest in the habitat of waterbirds was originally targeted more heavily at Thale Noi than the Phru (see Scott 1989). More recently the Phru itself has become recognised as an important habitat for Thale Noi waterbirds (Parr 1994). The story of the fishery is remarkably similar. It is only within the last few years that the Phru has been recognised as an important fishery in its own right and as an important component of the Thale Noi fishery (Heady et al 1996).

The 'natural' reservoir function of the Phru was the main inspiration for the RID project. It was in discussion of this project that the conflicts between development

and conservation became most intensified. Added to this was the uncertainty of the scientific knowledge upon which the RID project was based (particularly its effects on the fishery and water quality), and of the technical and administrative capacity of appropriate state organisations to manage the project in such a way that natural fluctuations could be replicated and responded to. As one academic involved in preparation of the EIA commented, 'It (the project) hopes that man can replicate and manage a natural system that he does not understand' (S. pers comm 1995).

This remark raises a number of important issues. Firstly, there is some doubt as to whether it would be possible to provide the type of data and information required to make an informed and neutral assessment of the project's potential. The Phru Khuan Khreng is part of such a wide, dynamic ecosystem that to adequately model the biology would be technically difficult. The EIA report from the Irrigation Project concluded that further scientific studies would be required as the evidence concerning the project remains inconclusive. The proposals for the Songkhla Lake Basin Barrage have met with similar concerns over the reliability of the scientific evidence concering the project. Sociological critics of scientific claims to neutrality would argue that such scientific assessments of the Phru would be flawed for internal and external reasons (cf. chapter two). The complexity and dynamism of the physical and socio-economic ecologies of the Phru and the Lake Basin undermine the capacity to develop a full scientific understanding. The institutional requirements of accommodating diverse needs and responding adequately to changing circumstances also present serious challenges. The management of water levels in the Irrigation Project requires technical skill, institutional adaptability to rapidly changing environmental conditions, as well as the institutional capacity to implement management strategies.

The potential benefits of the project to rice farmers and shrimp producers in the surrounding regions was of less concern to the people of the Phru. The direct 'benefits' of the project to the people of the Phru were emphasised. The project was presented in the villages as a means of increasing the water levels in the Phru and of preventing the extensive drying out of the *phru* during the rainy season.

Opinions were deeply divided between those in favour and those opposed to the project. Such opinion was not based solely on the environmental effects of the project. Many people stood to gain from employment and investment opportunities. Baan Glaang Phru was selected as a possible resettlement site for displaced people from other parts of the Phru that were to be flooded or affected by road-dike construction. As such, landowners in Baan Glaang Phru saw a possible business opportunity. Adopting the analysis of development as a resource in its own right it can be assumed that the vested interests of the power structures that state development supported in the villages stood to gain from the project.

It is difficult to assess and quantify the range of opinion in the villages. It was clear that during the period of fieldwork most people with whom I spoke were unclear in their own minds. I was frequently asked for my opinion and spent many late nights discussing the project. Many people believed that in principle the project would work. The official line was simple and on first assessment seemed reasonable; a higher water level would mean more fish and taller *grajut*. But many, even those in favour of the project in principle, were anxious whether it would work in practice. From the discussion of fishing practice and the flood fishing season (see chapter six) it is clear that local knowledge of the fishery reveals a range of factors that influence the condition of the fishery. These cannot be reduced to the simple variable of water level, although this is acknowledged to be of great importance. The previous discussion of local knowledge concerning the Phru Khuan Khreng, the fluctuation of water levels is seen as essential for the well-being of the prized species of fish, snakehead (*plaa chon*) and catfish (*plaa duk*). Two local explanations offered for the decline of the fishery were the changing water flow patterns and increased sedimentation. These factors had produced the widely detected conditions of '*nam boey*' (rotten water) and '*nam men*' (stinky water) which were considered to be a major cause for the poor catch of the flood season of 1995 (see chapter six). It was widely believed that both fish and trees (ie. melaleuca trees or *dton samet*) depended on fluctuating water levels. This environmental knowledge is embedded in the fishing practice of local people and has been articulated ore explicitly. This local perception is also supported by more formal academic analysis. MRAG (1994) describes snakehead (*plaa chon*) and catfish (*plaa duk*) as thriving on fluctuating water levels.

The ability of *samet* to survive in conditions of permanently standing water was also questioned in the Taylor and Sons report (Taylor & Sons 1985).

There was also considerable local concern that the interference of existing water flow patterns would affect fish migration patterns that linked the Phru to a far wider fish-ecosystem. This would clearly have a differential effect on communities that utilised different areas of the fishery and depended on particular migration routes. This concern was not solely based on the environmental impact of the project but also on administrative capacity of the authorities to respond to the differential needs of fishing communities in a fair and equitable manner. The case of Baan Paa Sombuun discussed in chapter six indicates that such administrative capacity may well be lacking.

During the period in which the EIA was carried out, opposition to the project was most vocal in Baan Paa Sombuun. The land to the east of the village was to be within the boundaries of the project and would therefore be flooded. This was the same area that villagers of Baan Paa Sombuun used to graze water buffalo and cattle, and it was felt that the anticipated yet uncertain increase in fish stocks would not compensate for the loss of livelihood from rearing livestock. Since the decline of the fishery the rearing of cattle has become one of the most important sources of income and provided a safety net for periods of economic scarcity. At one point villagers were so strongly united in their opposition to the project that they threatened to destroy the dike if it was constructed. However, the period in which this fieldwork was carried out was a time of significantly decreased fish stocks, extensive flooding during the rainy season and the loss of the rice crop. There was a growing sense that something needed to be done. But villagers felt seriously disadvantaged in not being able to assess the scientific evidence with which they had been presented. A series of public meetings had been called (in Thale Noi) but villagers felt that they were not given the chance to contribute, and did not trust or fully comprehend the explanations they were given.

The underlying question that concerned villagers, academics and government officials alike, was to what extent the existing 'natural' flood pattern could be interfered with,

without producing adverse environmental affects. Local knowledge of the fishery and explanations for its decline (see chapter six) illustrate the importance of an interconnected network of canals and waterways, and of fish movement. As with the EIA report (CORIN 1994), local explanations for the poor water quality were based on notions on the capacity of water to flow freely, and on the adverse effects of stagnant water and increased siltation (see CORIN 1994 p.A19). The turning over of soil and exposure to the air that was considered to be a contributory factor in the failure of the Special Project (see chapter six) was also identified by the EIA report. It was felt that the soil to be used in the construction of the dikes would become oxidised and would thus increase the acidity of the soils and the waters (CORIN 1994 p.A19). This effect was also identified by local people in their observations of canal digging and dredging (see chapter six).

Other Irrigation Department officials, not directly involved in the project but responsible for the region of the South that included the province of Nakhorn Sri Thammarat, expressed similar concerns as those discussed above. Further, it was felt that the evidence contained in the RID EIA was not wholly reliable and that no informed decision could yet be made. In principle it was felt that such radical interferences with the Phru would have a profound negative effect, and potentially on the whole Songkhla Lake Basin ecosystem. The most important problem that was identified were concerned with the poor administrative capacity to manage the wider ecosystem and to appreciate the big picture. As he said, 'Our biggest problem is that we have no overall masterplan. We just try to serve the needs of the people on a case by case basis. But the usual administrative system is not able to respond rapidly to the needs of the people, even if it is to build a small *khlong*.'

8.iib) The Phru as a Wetland: Holistic Management of the Songkhla Lakes

The improved profile of the Phru Khuan Khreng must also be seen as part of a continuing reassessment of the Songkhla Lake Basin as a whole. Despite the proliferation of government projects that would appear to contradict this, there is a growing awareness that manifests itself in many different forms, of a growing

perception of the Phru as ecologically important in its own right, but more significantly, as a crucial component of the wider Lake Basin ecosystem.

There is a growing awareness of environmental issues affecting the whole of the lake basin. This is manifest in many different ways. The establishment of the Songkhla Lake Basin Planning Committee while raising the profile of the basin as a whole has only given passing recognition to the Phru. Public concern for the Lake Basin has also increased. This was perhaps most strongly inspired by the publicity that has surrounded the proposed barrage across Thale Sap. This controversial project has generated a growing network of concerned village level organisations and NGOs. In the final dry season of the fieldwork, this interest gained a new profile with the consciousness-raising walk around the circumference of Thale Sap organised by monks from Wat Suan Mork, an internationally renowned temple, active in environmental conservation and development work. This was the first time the walk had been organised and it aimed to create dialogue between different communities that depended on the resources of the lake. The walk was widely publicised and generated considerable media interest in environmental issues affecting the lake. However, the first walk only included Thale Noi, and did not include the Phru. This was seen by the monks as largely because of time limitations, but it was acknowledged that it was something that needed to be addressed for future walks. Indeed the public meeting that the monks organised at Thale Noi highlighted the interrelated problems affecting Thale Noi and the Phru. However, as appears to have often been the case, inhabitants of the Phru had no voice of their own. Once again the Phru was merely an annex of Thale Noi, and the interests of the Phru were translated into the interests of Thale Noi.

The Wildlife Conservation Division (*glum anurak*) of the RDF is also becoming increasingly aware of the need to adopt a more holistic management regime for the whole of the basin. The RDF is involved in management of other areas of the lake system and have established a Non-hunting Area at the southern edges of the lake at Khu Khut in Sathingphra province (Pierce et al 1992). This waterbird sanctuary at Khu Khut has been able to implement conservation measures that have been largely

respected by local people and which have been applauded for leading to improvements in the fishery.

One of the leading figures in the Conservation Group at Thale Noi is a locally born man who is widely respected for his environmental knowledge: in particular his knowledge of the birdlife of the park. His concerns were based mainly on the failure of planners to develop a holistic view of the Songkhla Lake Basin, and the failure to appreciate the ecological value of the Phru in its existing 'natural' state. These are concerns that many villagers voiced. As he argues:

> 'Large environmental problems that have been going on for many years cannot be solved with quick solutions. If the drainage patterns of the area are interfered with too much the whole system could collapse. Look at this map of the waterways of the Songkhla Lakes (*see map of waterways*), everything is connected. If you do something here in the Phru it will have an affect somewhere else. Once you change something like the Phru you can't get it back. It's gone for ever. All these big plans want to change the Phru. But it's a wetland; wetlands are very important for biodiversity, for drainage, for lots of things. These projects want to dry it out or flood it and turn it into a lake. But wetlands have importance in their own right. The Phru is essential for the health of Thale Noi and of the Lake Basin. We need to balance the needs of conservation and development but there are some places that simply should not be developed. It's not possible to have the same level of development everywhere. The Phru is one of these places. But people don't see it like that. We are limited in what we do here because so many people have land rights and have their own interests. The Glum Anurak are the real owners of the Non-hunting Area. Any department that wants to launch a project here needs our permission. But sometimes they just go ahead and there's nothing we can do about it. Sometimes we object to a project (for example, the widening of a *khlong* that passed through a reserve

> forest), but we can't oppose it because of the protests of some of the local people.
>
> The Government's only concern is with improving infrastructure. That's what they mean by development. They want to promote industry around the Songkhla Lakes and for that they need freshwater. That's what they are really interested in. They want to freshen the water of the lake, and turn the Phru into a reservoir. But what will that do to the trees, the fishes and the people? Once you make such big changes, it's very difficult to rectify them if they go wrong.'

(Muu, Thale Noi pers comm 1995)

The above reactions reveal a great deal of shared interest between the OEPP and the *glum anurak*. Indeed their remit is broadly the same; to encourage conservation and development, and to resolve resource uses conflict. The problem of combining these competing interests is their great challenge. It is to this end that community-forestry and ecotourism are advocated. However, as worthy as these objectives may appear to be, the detail of their implementation and their effects are more obscure.

8.iic) Community Forestry

Comanagement of fisheries in the Phru Khuan Khreng has not received much attention from the DOF. However, there is renewed interest in community forestry within the RDF. This would have implications for fisheries management and rehabilitiation as the economic viability of wetland community forestry would partly lie in the fishery potential of such forests.

The promotion of community forestry (along with ecotourism) is very much a product of the recently adopted ethos in Thai development for sustainable development, based on community participation (see Chambers 1983, Korten 1986, Calavan 1986). Adopting such an approach to management of natural resources is a

tacit recognition of an interrelationship between poverty and environmental degradation. In order to ensure environmental conservation livelihoods of local people must be protected and/or improved in a form that does not damage the environment. It therefore requires restrictions on certain resource uses. In short, it is an attempt to remodel rural economies into a particular vision of the environment. Involvement of rural communities in management of their immediate natural resource base also offers pragmatic administrative advantages. The management of a commons with such an area as the Phru poses logistical problems to state authorities. This has been a main complaint of the Fisheries Department. By involving local people in the day-to-day management the burden on the state is lessened.

As a substantial literature will testify, the precise meaning of these highly malleable terms such as 'community participation' and 'sustainability' is often ambiguous. Indeed, Turbyne (1995) argues that such concepts as participation (as community forestry implies) mean all things to all people. In Thailand the adoption of community forestry is further complicated by the ideological connotations of the way in which concepts of 'community' are applied. In many ways, advocating such populist proposals as community management without breaking down what these concepts mean is a convenient way of side-stepping the real issues. Behind these proposals are issues of who has rights of ownership, and who should benefit from these policies. There is also a question of to what extent administrative villages constitute communities of shared interest, and to what extent power structures in rural society allow for equitable participation. The internal dynamism of the villages in this study would suggest that such a simplistic correlation between village and community should not be made.

This section is not intended to be a comprehensive critique of proposals for the promotion of community forestry and ecotourism for the Phru. Indeed, no such formal structured proposals exist as yet, although both community forestry and ecotourism are strongly advocated by the OEPP, RDF and Tourism Authority of Thailand. Rather, it is intended that this section consider the assumptions and implications of such policies for the people of the Phru.

Community forestry has become a buzz word of contemporary forest management in Thailand. However, as was discussed in chapter three, interpretation and negotiation between the RDF and NGOs of the proposed Community Forestry Bill continues (Pingaew & Rajesh 1996, Fox 1993). Management of the forests of Thailand continues to be highly politicised, and has implications that reach far beyond issues of forest management. Ownership and access to resources that are being claimed by the State shakes the foundations of the Thai political system and implies a political voice for rural peoples that has so far been ignored.

The first record of community forestry being advocated for the Phru and surrounding areas is found in the Taylor and Sons report (Taylor & Sons 1985). It is advocated as a means of ensuring the sustainability of the forest areas with the productive benefits accruing to the local community. More recently the concept of community forestry has been considered by the RDF as a way of incorporating fishing and *grajut* production, and thereby satisfying the economic aspirations of the local population while maintaining the ecological viability of the forest.

Somjai (1991) has presented an outline of policy objectives for the management of the Phru Khuan Khreng. In this paper, he details the ecological importance of the Phru and the main environmental changes. Management strategies include the replanting of the Phru forests, and the strengthening of RDF policing activities to prevent further forest fires and illegal hunting. He also recognises that income levels in the Phru are low and that the viability of the forests depends upon the ability to satisfy the economic needs of the Phru inhabitants. To this end ecotourism and community forests are advocated as well as smaller-scale income generating activities.

Interviews with RDF officials revealed a vision of the form that community forestry in the Phru might take. It was felt that in order for a community forest to be environmentally and ecologically viable a mixed forest must be planted that allows for range of economic activities. In this way the diversity of the Phru could be contained in a micro forest. The vision that seemed most realistic was outlined as follows. The forest would be relatively small with an area of approximately 100 rai, and would

serve as a reserve forest and a reserve fishing ground. It would therefore be possible to have several forests that served the needs of smaller sections of the local communities. It was felt that this approach would facilitate local management and monitoring. Having several fish reserves would make a greater contribution to the rehabilitation of the wider fishery so that some of the benefits would accrue to other fishing communities.

In order to be economically viable it was felt that these forests would have to provide a number of resource uses that would be seasonally available. This would allow fishing, the planting and collection of *grajut* and the collecting of honey. In many ways this was to be a grander, more integrated version of the failed Special project. A *khlong* would mark the perimeter of the reserve to ensure water flow and increase fish stocks. Within the reserve forest area *grajut* and melaleuca could be planted. The reserve would therefore not simply be an artificial replication of the Phru ecology, but would actually utilise the existing conditions of the Phru. Through careful management and avoidance of over exploitation the reserves would become rehabilitated.

Local opinion concerning the rehabilitation of the fishery fitted very closely with the above proposals (cf. chapter seven). The idea of reserve fishing areas has gained favour and was strongly advocated at the dissemination workshop held at Thale Noi by CDS, CORIN and a local NGO *Lae Dtai* (Look South). Environmental damage was felt to be a more significant factor than overfishing. Local concern was directed at the loss of 'natural' fish retreats in the *phru* forests.

8.iid) Ecotourism

Recognition of Thale Noi and the Phru as a major waterbird habitat, and the establishment of the Non-Hunting Area has already created a burgeoning tourist industry. It is claimed that 100 000 people visit the Park annually. Most of these tourists are Thai, and many of them are school children brought on educational trips.

The tourist industry is widely touted as a success story (Parr 1994, Mukda 1994) that offers even greater potential.

The marketing of Thale Noi is based on its natural beauty and a vague concept of 'ecotourism'. This is taken to mean an educational form of tourism that has little impact on the environment. In his assessment of the tourism potential of the Thale Noi Non-hunting Area Parr (1994) writes of the survey's aims,

> "It was considered that the strengthening of ecotourism at the site may heighten environmental awareness among visitors; increase conservation value of the site; increase financial returns to villagers; and, most probably, assist management of the wetland." (Parr 1994 p.14)

The twin goals of conservation and development are not easily reconciled. Whether stated explicitly or not, measures to protect the environment are also measures to refashion rural society. The paradox of promoting ecotourism, particularly in a site such as Thale Noi, is that by definition its expansion is limited by the desire to avoid any negative environmental impact. Access to Thale Noi and the Phru Khuan Khreng is restricted and could only be overcome through the building of walkways, and the expansion of boat services. The tourist industry has so far been concentrated in Thale Noi but it is believed that the Phru has even greater 'natural' beauty and therefore tourist potential (Parr 1994). Every government agency refers to the potential of ecotourism for the Phru and the success it has already enjoyed in Thale Noi. Yet this success story is far from what it might appear to be at first sight.

The feature of the tourist industry that is most widely presented as an example of success in Thale Noi is the way in which the RDF and local people have co-operated. It is argued that local people have been able to run the industry for themselves and are involved in managing the small restaurants, gift shops and boat hire service. However, out of a population of over 10 000 only a small proportion could by any stretch of the imagination be said to have benefited. This alleged success also reveals preconceptions of rural communities and the form that co-management should take.

Mukda (1994) writes of the healthy relationship between Forestry Department officials and local people, and the ...

> 'bridge of understanding and communication between the forestry officials and the local villagers. One *phuu yai* (village headman), three assistant *phuu yai*, and a further 14 respected elders from Thale Noi village run a boat service for visitors, in rotation.' (Mukda 1994)

The involvement of seventeen *phuu yai* and elders does not necessarily suggest an equitable distribution of benefits, nor does it suggest great potential for the majority of the local population. That it should be presented in this fashion says more about the way in which the 'village' can be confused with an idealised 'community'. While Thale Noi may be a success story when compared with other national parks, further development of the tourist industry would require a wider distribution of the benefits through the local population. This would need to include the people of the Phru Khuan Khreng. In a rural economy that is becoming increasingly stratified, a tourist industry that caters to day-trippers and bird watchers would seem to offer only limited potential to the wider population. If it is thus limited, tourism may well intensify economic stratification rather than promote equality.

The most frequently identified threat to ecotourism in the Thale Noi Non-hunting Area is of local resource use. In particular, Parr (1994) identifies the cultivation of *grajut* as a potential disturbance to the waterbird population. These waterbirds are the main tourist attraction in the park. However, TAT official also confided that villagers engaged in fishing or collecting *grajut* were a picturesque feature of the park that would also be attractive to tourists. It remains to be seen how these tensions will be reconciled, but it would seem that a vague notion of a 'nature' that is attractive to tourists may be the defining variable.

8.iii The State in the Village, and the Village in the State

A persistent theme in the literature on rural development in Thailand has been the issue of the political relationship between the state and the village. The state is

presented as extending its influence and control over peripheral rural areas as a means of legitimising its own position and that of the nation state (cf. Hirsch 1989). The village is presented as being a product of nation-building; a bureaucratic invention that often bears little connection with local level notions of 'community'. It is also argued that the state often has no legitimacy in the eyes of the ordinary villagers, but has extended its influence to the village through a network of patron-client relations that extend from Bangkok to the village (Hirsch 1989, Rigg 1991).

The provision of 'development' has been the main vehicle by which the state has entered the villages of rural Thailand. This has been argued to be a 'gift' that binds the rural recipients in patronage relations of debt and obligation. The quality and extent of this development has been the gauge by which the state has been judged in the villages. The failures of much state-led development, the overlooking of local knowledge and practice has shaken the image of the state and has raised public criticism. This has led some commentators to argue that a more politically confident and assertive rural population is increasingly demanding "development' as a political right, rather than as a gift (Vandergeest 1991). Writing of the area under this study Masae (1996) argues that this transition has yet to be realised, and that the provision of development continues to follow lines of patronage. However, the assertiveness of rural people does not necessarily manifest itself in formal political opposition. Very often political assertiveness is more in evidence in the 'everyday forms of resistance' (cf. Vandergeest 1993b).

The political history of the South and in particular the Phru Khuan Khreng has been discussed in earlier chapters. The relationship between the state and the village has been argued to have been strained (McVey 1994). As in much of peripheral Thailand, historically much of state led development has been aimed at pacifying a troublesome and violent rural population. The Phru has had a long-standing reputation as a hotbed of crime, and its people have been presented as being untrustworthy and unruly. The intensified development intervention of the late 1970s was also targeted at the communist insurgency and the rural 'mafia'. The main developmental objective was pacification through the building of roads and the establishment of law and order. In many peripheral areas of Thailand, it was a period in which village defence

committees were formed, and summary executions were common. At this time the Phru was considered to be one of the most unruly areas of one of the most troublesome provinces in all of Thailand (RDF Official personal communication 1995). The dense forests of the Phru were popular retreats for communists and bandits (often indistinguishable in government propaganda). Pacification was the main objective and even within the last two years police organised local people into posses to assist in the capture of bandits hiding in the forest.

As environmental and economic change becomes more intensified, and the political role of the state more prominent, the role of the state and of development is being more critically assessed. However, development in both villages has been uneven and often ineffectual. Baan Paa Sombuun still does not have the most basic trappings of state development. There is no electricity and only a poor quality road. The village has received no, or very little, assistance from the state despite regular promises. Development projects in Baan Glaang Phru also have not been successful. Despite the building of roads, the introduction of electricity, and improved access to health care at local clinics, other small-scale income generating projects have fared less well. The Special aquaculture project has already been discussed. This was not an isolated failure. Other projects including chicken-rearing, kitchen gardening have had very limited success in reaching any significant number of people. Explanations for the poor record of state involvement reveal similar themes of corruption (incorporating local powers), ignoring local people's knowledge, not paying attention to the detail of life in the villages, and manipulating what local people say in order to suit their own ends.

8.iiia) Local Level Perceptions of the State

Popular local-level perceptions of the State's involvement in the villages of Baan Paa Sombuun and of Baan Glaang Phru, reiterate many of the themes reported in other parts of Thailand. However, development and state intervention in the Phru has not been the unqualified failure that it is often argued to have been in other regions. As with all policy initiatives, there are winners and losers. Significantly in the Phru, the gains of the winners and the political position they are able to occupy has had a

profound effect on the structure of the villages. With greater state involvement at the village level of the Phru, policy itself has become an important resource to be incorporated into the resource profiles of the rural elites. This is particular true of the conservation policy and the local power structures that have been created throughout the establishment of the Glum Anurak.

For most villagers of the Phru there is very little direct contact with State officials. When there is such contact in public, most villagers adopt a deferential attitude and manner that inhibits their ability to present their own interests. Villagers themselves are aware of their own political weakness and inability to influence the workings of state policy. Much of this is attributed to lack of formal education and knowledge (*mai mii khwam ruu*) that inhibits them from standing their ground. As one informer pointed out, often what the 'experts' say is such blatant rubbish that the villagers do not know where to begin. In public meetings the opinions of ordinary villagers are rarely elicited, and the consensus of the village tends to be the opinion of the influential.

A common source of resentment was the failure of government officials to come in to the villages. When they did so, it was widely felt that they only sought the opinions of influential villagers. Often they came in large groups in expensive pick-ups only stopping briefly. It was felt that in doing so they failed to appreciate the complex issues affecting the villages. Many people felt they were looked down on, and were not taken seriously. When they were able to contribute they often felt uncomfortable in the face of confident, articulate officials. As one person said, 'They (the government officials) twist their words (*dtalop dtalaeng*) to suit their own ends'. In Baan Glaang Phru it was clear that underpinning these perceptions of government officials was the widespread perception that the driving force behind most state led development now was personal financial gain of those involved rather than the benefit of the whole village. The issue of corruption was frequently referred to in discussions of the Special Aquaculture Project. Corruption also came to a head in the elections of the Village Development Committee when the previous representatives were removed for what was thought to be abuses of their power.

Despite the lack of direct contact between the State and the village, and state officials rarely being seen in the villages there have been a number of surveys carried out in both villages. In the early stages of the fieldwork this was a common topic of conversation. Several rounds of surveys and questionnaires had been carried out in the Phru over recent years. None of the villagers was aware what these 'studies' had been for and as one person expressed it in challenging my own presence in the village, none of the results or benefits from these studies had ever been presented to the villagers. This was not strictly true, although it may be true in spirit. A summary report from the Irrigation Department's Environmental Impact Assessment had been widely circulated in the village and was frequently brought out during interviews and discussions. However, it was clear that it was felt that the report did not answer their concerns and was merely a means of deflecting criticism by overwhelming the reader with incomprehensible information. The weight of the written word wrapped in an officially bound document should not be underestimated. It certainly does not appear to be by the government agencies who produce such documents.

Problems of communication are central to the relationship between the state and local people. Irrespective of official figures, levels of literacy are of such a level as to impede meaningful political participation by the majority. Official reports are often poorly understood. Indeed written communication between villages and government officials seriously disadvantage of villagers. In one incident, a reply to an official letter was dictated by the *phuu yai baan* to a novice monk (the only person present who it was felt could write to a sufficiently high standard) who completed the letter on a scrap of paper. One can only speculate how such communication is regarded by provincial officials, and what weight it holds in ensuing discussions.

Commentators on Southern Thailand have highlighted the significance of language differences between Bangkok educated officials and local people only able to speak Southern language (Diller 1991, Vandergeest 1991, Masae 1996). As older informants recounted, early contact between villagers and officials was difficult; officials could not speak or understand Southern Thai, and only a few villagers were confident in the elaborate Central Thai of the government officials. Even now, most people over the age of forty have great difficulty speaking Central Thai. Improved

communications, particularly the spread of television and radio, has benefited people's comprehension of Central Thai.

The sense of Southern identity is also an impediment to the central state gaining a sense of legitimacy in the rural South. The failure of many government officials to speak the Southern Thai has to some extent been rectified in recent years but it remains a serious problem in the minds of villagers and government officials alike. In the last few days of the fieldwork a meeting was called by Forestry officials from the Provincial Replanting Office. In honour of the fiftieth anniversary of His Majesty the King's accession to the throne, the RDF was involved in replanting trees throughout Thailand. The Phru Khuan Khreng was identified as a suitable site and it was planned that 4200 *rai* of Phru land should be replanted with *samet* (melaleuca leucadendra). One of several villages in the Phru to be included in this plan was Baan Glaang Phru. The RDF had intended that villagers would willingly co-operate with this project by carrying out much of the mundane planting work as a mark of respect for their King. However, this was not to be the case. The RDF felt that Baan Glaang Phru was the only village that had put up opposition to the project and had refused to co-operate. The Divisional Head of the Reforestation Section of the RDF took it upon himself to call a public meeting in the village to discuss local objections to the project.

The meeting that followed revealed many of the misunderstandings and prejudices that characterise the relationship between government officials and villagers. The divisional head was aware that trust between the RDF and the locals was poor and had to be re-established. He felt his own position needed to be clarified and opened the meeting by drawing on his Southern credentials. He apologised for being unable to speak Southern Thai and acknowledged that he himself came from the Central region and was only conversant in Central Thai. However, he continued by emphasising his Southern credentials. He pointed out that his wife was from the South and that they had both chosen to live in the South, rather than any other region of Thailand. He then continued with what was believed to be an impressive performance by imploring his '*pii noong*' to co-operate with the project.

He continued by explaining to the villagers that he wanted to learn what occupations (*achiip*) they were engaged in. As is common, the level of detail with which he was satisfy was merely confirmation of his own view that fishing and *grajut* were the main activities. Reforestation of a large area could therefore only be advantageous to the village as a whole.

The objections to this project illustrate the major concern of local people, and what has come to be the major impediment to all three state initiatives to be discussed in this chapter; land rights. The system of land title in rural Thailand is confused and ambiguous. Often those holding land certificates are unaware of their legal standing and what such certificates entitle the holder to do. The ambiguity of the system leaves it open to extra legal influence. There is a strong sense that those with influence (*itthipon*) and who are able to manipulate the system and the law to their own ends, are able to acquire land certificates that would be impossible for ordinary people. As has already been said, lack of access to land in Baan Glaang Phru is seen by the *phuu yai baan* and many villagers as the greatest impediment to development. In Baan Paa Sombuun access to land in its own right is less of a problem than the quality of the land and the lack of access to other developmental resources that might make the land more productive.

As became immediately apparent in the above mentioned meeting, a major cause for local people's reluctance to join in the project was the uncertainty regarding their own rights to land that had been designated as a reforestation site. The vocal contingent of locals at the meeting pointed out that they all held PBT5 and PBT6 certificates to the land, and that the land was used for planting rice and collecting *grajut*. If the project was to go ahead on that site, it was argued that some form of compensation should be implemented. In fact, other members of the local audience whispered that the land was totally unsuitable for rice farming but it had indeed been a source of *grajut*. However, it was also clear that these people with PBT5 and PBT6 certificates were unaware of what they were entitled to. The RDF official pointed out that the land in question was within the boundaries of the *paa so-nguan*, and as such no land titles could legally be held. He also argued that PBT5 and PBT6 certificates merely granted usufruct rights and that the land could not be sold or passed on to descendants. Local

resentment was not to be so easily placated. In response to local concerns the RDF official repeated what was the standard official line regarding land rights in National Parks and forest reserves. He continued:

> "What would be the point of the government granting you villagers land rights? We want to conserve the forest for our children and grandchildren. What happens when the government gives land rights to the people? What has happened all over Thailand when the government has done this? The villagers don't think about the future, about conserving the forest. They sell the land as quickly as possible for a lot of money, buy a pick-up, go out with their friends eating and drinking and gambling and then all he money is gone and there's nothing left for the children or the grandchildren. And then the forest is finished."

The above quotation perfectly encapsulates the widely held attitude of most government workers in the Phru, including some of the locals who were employed by the Glum Anurak. The boom in land prices of recent years in Southern Thailand had fuelled a number of popular jokes of villagers who had sold their land for a quick profit only to lose the proceeds in extravagant consumption, and who were then reduced to working on the building sites of Southern cities. The issue of who should hold rights to the land and to manage the Phru for present and future generations underpins the following debate.

After the meeting the forestry officials went to examine possible sites and to discuss the options for the reforestation scheme with the *phuu yai baan* of concerned villages. One area in particular was of interest. Part of the area was close to the road and would therefore be visible, but one section of the land was privately owned and the owners held NS3K certificates for the land. However, it was felt that this impediment could easily be overcome.

8.iiib) The *Glum Anurak*

The most obvious manifestation of the state in the daily life of the Phru Khuan Khreng is the presence of the *glum anurak*, the local unit of the Wildlife Conservation Division of the RDF responsible for the whole of the Thale Noi Non-Hunting Area. The *glum anurak* are based at the Non-hunting Area headquarters at Thale Noi with five sub-stations throughout the Phru. One of these sub-stations is in the village of Baan Glaang Phru. These sub-stations which are staffed entirely by local people mark significant bridges between the villages and the State. The *glum anurak* are highly significant local actors in an interface between the state and the village (cf. Arce and Long 1992). However, as far as the villages under this study are concerned, the *glum anurak* is most closely associated with Baan Glaang Phru. All *glum anurak* staff at the Baan Glaang Phru sub-station are from that village, and are also close kin from a well-established and influential kin group. Rather than a bridge between the state and the 'community' of the Phru, this represents a bridge between the state and a particular section of one village, and effectively excludes other villages. Equally, the RDF Wildlife Conservation Division is only a faction of the state apparatus (cf. Chai-Anan 1991).

The main headquarters of the Thale Noi Non-hunting Area is based on the lake side, on the boundaries of the adjoining villages of Baan Thale Noi and Baan Phanang Tung. Between 1979 and 1983 a further five sub-stations were established, with three of them being situated in the Phru Khuan Khreng. In 1980 the second of these sub-stations was established in Baan Glaang Phru (Parr 1994). The sub-station in Baan Glaang Phru employs between eleven and thirteen local people, but only the head of the sub-station has the official title of civil servant (*kharachagaan*).

There was much discussion of the influence of the *glum anurak*. Much of these discussions were based on rumour. As such I am reluctant to relate the detail of these rumours. However, rumour has long been a valuable source of anthropological data, and in this spirit it is important to present the essence of these rumours. Much was made of the way in which the RDF had been obliged to form an alliance with an influential group within the village in order that the sub-station could be built and

manned. This was clearly necessary in order that the non-hunting regime gain some level of legitimacy. The main thrust of these rumours suggested that an influential figure in Baan Glaang Phru made a deal whereby he agreed to sell land to the RDF to build the sub-station. In return, it was agreed that his three sons would be employed by the *glum anurak*. It is clearly felt by many in the villages that the *glum anurak* is an increasingly important power base in the Phru. It is not the only power base that is sanctioned by the state (cf. *phuu yai baan*, tambon council, Village Development Committee) but as state involvement in the Phru is increasingly under the banner of conservation and through the Department of Forestry, the *glum anurak* are an increassingly influential organisation. The broad concept of conservation is increasingly being accepted by villagers in the Phru as worthy objective. Thus the *glum anurak* have a certain status and prestige within the village. However, the conservation interests of the majority of villagers do not simply translate into the protection of waterbirds and the complete prohibition of logging.

The main responsibilities of the *glum anurak* are to prevent illegal activities; mainly logging and hunting birds. However, most of their time is spent in clearing water hyacinth from Thale Noi. The number of arrests for these illegal activities has been in steady decline since the establishment of the Non-hunting Area in 1975. Parr (1994) concludes that illegal activities have now been 'suppressed' (p.11). It is difficult to monitor and quantify the extent of illegal bird hunting. It clearly does still occur but mostly undetected, and presumably on a small scale. In most cases if people are caught for shooting birds they face a fine of 500 Baht upwards and the confiscation of their firearms. Hunting birds using slings is more difficult to detect and may well still occur. However, it would appear to be rare.

The continued illegal logging is seen as a more serious issue. Although the use of melaleuca in charcoal manufacture has been completely eradicated in the Phru the *glum anurak* reported that the growth in the shrimp industry has generated a new area of demand. Melaleuca is much sought after for use in the construction of shrimp ponds as supports for the pond walls. Since logging melaleuca requires several people, suppressing these activities requires military style planning and co-ordination between the sub-station staff and the Thale Noi headquarters. When the *glum anurak*

attempt a raid on loggers in the act, at least some of them go armed with semi-automatic rifles. During my fieldwork I only witnessed three such incidents and in all cases those caught were first time offenders. They were brought to the Baan Glaang Phru sub-station and were given a formal warning in the presence of the police. All timber and logging equipment (other than boats) was confiscated. Second time offenders face a term of five years imprisonment.

In all these cases those caught were from villages other than Baan Glaang Phru or Baan Paa Sombuun. When people from their own village are involved, or are merely suspected of involvement, the *glum anurak* are caught in an extremely difficult situation. It is perhaps too easy for outside commentators to judge the actions of people in these situations. As with all the villagers with whom I spoke during the fieldwork, *glum anurak* workers are still in the process of assessing environmental and socio-economic change. All the *glum anurak* workers have taken on board the official conservation thinking and view the forests as important national resources, as well as important local resources. The forests are seen as depleted, vulnerable and in need of protection and rehabilitation. Most of the *glum anurak* are very knowledgeable and are involved in further study and training, particularly concerning a natural science type ecology. Yet there is a great deal of respect for other villagers' environmental knowledge. Several of the young men in the *glum anurak* are considering the Wildlife Conservation Division as a possible career.

At the same time the *glum anurak* workers see themselves as *chaow baan* (villagers). All *glum anurak* workers continue with other livelihood strategies. Several go fishing or collecting *grajut* early in the morning before beginning work with the *glum anurak*. They identify themselves as *chaow baan* and voice the same concerns regarding the relationship between the state and the villagers; lack of respect for local conditions, practice and knowledge, and problems of corruption. At times members of the *glum anurak* have spoken for the interests of their fellow villagers. However, the *glum anurak* is also an important conduit for state intervention through the RDF.

With intensified interest in conservation the *glum anurak* and the RDF are at the centre of management of the Phru Khuan Khreng. With the establishment of the *glum*

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With intensified interest in conservation the *glum anurak* and the RDF are at the centre of management of the Phru Khuan Khreng. With the establishment of the *glum*

anurak sub-station as well as the presence of the Forest Fire Prevention Unit at Baan Glaang Phru, the village is becoming a geographical and political centre for the management of the Phru region of the Thale Noi Non-hunting Area. It is perhaps not surprising then that the *glum anurak* appears to be viewed more favourably in Baan Glaang Phru than it does in Baan Paa Sombuun. The interests of the *glum anurak* workers can be expected to be closer to those of their fellow villagers and kin. The specific conditions of Baan Glaang Phru are also more clearly understood. Baan Paa Sombuun is politically and geographically half-way between its neighbours of Thale Noi and Baan Glaang Phru, and lacks their political influence.

The case of Noi, one of the younger hopefuls in the *glum anurak* illustrates many of these political issues. Noi as with most other *glum anurak* workers comes from one of the most well-established, although not necessarily wealthiest families in Baan Glaang Phru. He is the son of a well-respected informal leader, who is also the elder brother of the head of the local *glum anurak*. He and his family own productive land around the *khuan*, and are involved in several trading and business activities, but are not involved in fishing or *grajut* collectino. Noi is widely considered to be the heir apparent of the local *glum anurak*, and indeed sees himself in this role. He has represented the village *glum anurak* at various public meetings, including a meeting at the Prince of Songkhla University to discuss the Taylor and Sons Report for the Barrage Project. Purposively outside of formal village politics Noi is able to move freely between many village circles, and has managed to earn or win the respect of many political and non-political figures in the village. He spends a gret deal of his time cultivating a variety of friends and alliances in the village, but has no intention of becoming involved in formal village politics, as the responsibilities are felt to outweigh the benefits. Siginifcantly Noi feels that the *glum anurak* holds great political potential as conservation and the RDF become the main thrusts of state involvement and management of the Phru.

He attempts to remain outside of formal village politics. However, the *glum anurak* have at times been forced to act against illegal logging by their own villagers. One incident in particular caused a great deal of consternation. The Baan Glaang Phru *glum anurak* had been ordered to apprehend a group of locals involved in illegal

logging. However, Noi and others were close to this group and reluctant to act against them. At the same time, they were also aware that the Thale Noi headquarters felt that the Baan Glaang Phru *glum anurak* were not always fulfilling their duties as was expected of them. Noi was caught between local loyalty, and RDF expectations. It was a tense situation but a compromise was reached. Some of the group were apprehended but before they had carried out any logging. It was then possible to give them a formal warning, but without having to take formal action against them. However, Noi realised from this incident that if villagers were to persistently act against the RDF, he would be obliged to act against them in order to secure his own position with the RDF. But his own political aspirations in the village needed to be balanced. The *glum anurak* could not be seen to be acting in a partisan manner, but must also be seen to represent local concerns regarding the RDF and the regulations of the Non-hunting Area.

As actors on the state-village interface, the *glum anurak* represent state penetration of the village but also village penetration of the state (cf. Hirsch 1989a). It is a form of co-management, and of involving local people in resource management. The *glum anurak* are able to voice concerns of the village, but they clearly do not represent the village in any accountable form. Indeed with increased diversity of resource uses and interests among villagers, one should be wary of aggregating opinion to the level of the village. In particular the interests of the RDF do not coincide with the concerns among the poorer sections over land title. Without more widespread political participation there is a possibility that the *glum anurak* will become a power base that could become the lever for greater political stratification.

8.iv Conclusion

This chapter has discussed ways in which the Phru Khuan Khreng is being valued and interpreted in large-scale state management initiatives. These 'cultural imaginings' (cf.Croll and Parkin 1992) of the state, are becoming increasingly influential in the management of the Phru. They are largely shaped by national interpretations of development and conservation. Their feasibility also depends on the long-term

sustainability of the combined processes of economic growth (viz. on terms of GDP growth), industrialisation and urbanisation, in which these plans are framed. Significantly fisheries and the complex local economy are only minor concerns of large-scale management proposals towards the Phru Khuan Khreng.

The conflicting approaches of the RID Irrigation Project and the Non-hunting Area are indicative of the conflict of interests and poor co-ordination between government departments in Thailand. The responsibilities of the Departments of Forestry, Fisheries and Irrigation all overlap in wetlands. All these resources are brought together in a wetland ecology. In the case of the Phru, management also requires co-ordination across provincial boundaries. However, the literature on co-ordination between state departments in Thailand suggests that this is limited by political as well as organisational constraints (cf. Thongsawate and Tipps 1988). It is argued that government departments are struggling for their own areas of influence and their own departmental interests.

Conflict between state departments is also indicative of a set of problems particular to modeling wetlands. State policy towards the Phru attempts to base itself on scientific interpretation. As the discussion of the sociology of scientific knowledge illustrated (see chapter two), for both internal and external reasons, the ability to model a wetland such as the Phru must be questioned. Wetlands are dynamic and difficult to define. They constitute a number of natural resources (eg. water, forests, fish) as well as a number of resource uses and resource users. Their ecological value is defined in terms of their relationship with a wider ecology, and consequently with wider interests. As a result, wetlands inspire diverse interpretations and valuations.

The role of local resource users in macro planning is also minimal. The political and bureaucratic structure does not encourage local participation. A cultural prejudice of policy makers is perpetuated through the forum of discussion, as well as the medium of formal knowledge. Public meetings and government reports create a veneer of participation, but in fact, further limit meaningful local participation in the policy process. The interests of local resource users and state departments do not always coincide. This is a clash of knowledges and a clash of interests. While Majone (19)

argues for the broadening of the community of policy-makers, and Chambers (1996) argues for the inclusion of the knowledges of 'the last', there are clearly fundamental structural impediments. The knowledges and interests of the locals are not valued, and there are clearly political, rather than simply managerial reasons why this is so. At the heart of environmental management are issues of ownership, and appropriate rights and responsibilities.

As has been discussed, wetlands and wetland fisheries in particular, present such challenges to biological modeling that the capacity to model such a resource system must remain in doubt. The institutional capacity of a state authority to manage a wetland such as the Phru must also be questioned. Management therefore requires a high degree of co-operation between the state and local people. However, in order that it have legitimacy a management regime must be sensitive to the needs, interests and knowledges of local people. While the state would wish to define these in 'environmental' terms, for local people they are very much issues of economy and community.

The concept of resource users as applied to the Phru must now include local people and the state. Rather than attempt to refashion the Phru, policy would be better guided by the principles illustrated in local livelihood strategies; multiple resource use, and micro-level adaptive strategies.

CHAPTER NINE

WHOSE NATURE COUNTS IN NATURAL RESOURCE MANAGEMENT?

CONCLUSION

9.i The Special Case of Wetland Fisheries

Environmental management is an attempt to impose interpretations and valuations of the environment on the human world. This thesis has argued that these interpretations are socially constructed. That is to say, human understanding of the environment is not solely determined by 'the world as it is' but is influenced by the social world in which people operate. It is in the arena of policy that a multitude of interpretations of the environment is brought together. These interpretations are not neutral, but are consciously prescriptive for the physical and social worlds.

Wetland fisheries management is a special case of natural resource management, posing specific challenges. There is something in the dynamic 'nature' of wetland fisheries that generates a diversity of interpretations of their function, structure and value. The dramatic seasonal change of wetlands, and the largely hidden nature of the fisheries they support make their definition and modelling problematic. They cover wide geographical areas so that their boundaries and relationships with surrounding ecosystems are often unclear. They support a range of resources, a range of biodiversity, and perform a number of ecological functions for surrounding areas. Their essential 'nature' and value is therefore difficult to determine. Historically wetlands have tended to be perceived and managed as wastelands. They offer little potential for economic development, and have been considered as inhospitable environments. The most commonly adopted management strategies have been flooding or draining, largely as a means of improving their productivity. It is only very recently that their undisturbed 'natural' state has been presented as being of value in its own right.

Contemporary fisheries management rests upon notions of balance between levels of extraction and regeneration. This requires an understanding of the socio-biology of a fishery. Modelling fisheries is highly problematic, but even more so in the case of wetlands. Biological models are not easily applied in a situation such as that of the Phru Khuan Khreng. Wetland fisheries are subject to extreme seasonal change. Only a relatively small area is permanently flooded, and the fish population can increase and decrease dramatically between the dry and flood seasons. The condition of the

fishery is related to a number of environmental other variables; such as the condition of the wetland vegetation, water quality and hydrology. Wetlands also tend to support a large number of fish species, only a few of which are caught commercially. The relationship between populations of different fish species is difficult to determine (see MRAG 1994).

Levels of human exploitation of wetland fisheries are also difficult to model and quantify. Local utilisation of wetland fisheries does not fit well with established understandings of rural economies. Fishing requires a diversity of techniques in order to accommodate seasonal change and localised environmental conditions.The use of multiple resources is a prominent feature of wetland economies. The economic importance of fishing, and therefore local perceptions of the fishery can vary enormously among wetland populations, and through time. In order to better understand the fishery it is therefore necessary to place fishing in the context of multiple resource use. The seasonal dynamism and subsequently the high degree of uncertainty, generates 'irregular' patterns of resource use. Wetland economies are highly dynamic. They are dependent on adapting strategies; adapting to seasonal environmental change as well as adapting the wetland environment. With greater state and market penetration, local economies such as in the Phru Khuan Khreng are also operating in a wider socio-economic environment in which extraction of natural resources is but one of a range of potential livelihood strategies. The significance of fishing must therefore be regarded in this context. As wetlands become the targets of policy, the interpretations of policy-makers become increasingly influential. Often they do not fit well with local understanding and practice.

In order to manage a fishery it is necessary to understand both the biology and socio-economics. Fishery management models based on notions of catch and effort (eg. BEAM4) require a vast amount of data. Quantifying catch and effort in a dynamic, irregular fishery such as the Phru Khuan Khreng is particularly problematic. This therefore has implications for the relative influence of scientific and local knowledge in the policy process. Many authors have written of the unreliability of natural science in environmental management (eg. Enters 1995, Yearley 1989), and the importance of local knowledge (eg. Chambers 1994). If, as the evidence in this thesis would suggest, models such as the BEAM 4 cannot adequately be applied to wetland fisheries such as the Phru, modelling and monitoring would require a greater level of input from local fishers. The question then remains of how this level of local input could be realistically achieved.

The state is becoming increasingly involved in management of the Phru Khuan Khreng. The impediments to local participation in Thailand have been discussed (see chapter four). In the case of the Phru there are further institutional issues. Macro-level policy towards the Phru is inconsistent, and often contradictory. For example, while the RDF and OEPP are proposing conservation management strategies, the RID are planning a major refashioning of the Phru environment. Lying across three provinces, and falling under the influence of the Departments of Forestry, Fisheries and Irrigation, as well as the Office of Environmental Planning and Policy requires a high degree of co-ordination and co-operation. The evidence from Thailand would suggest that such a level of co-operation is rarely achieved, and that there are fundamental reasons why this is so (Rigg 1991, Tongsawate and Tips 1988). Since wetlands support a number of resource users, management policy must somehow accommodate a number of local and national stakeholder interests. In order to hold a sense of legitimacy in the eyes of rural people, any environmental management regime must also address wider local concerns.

9.ii People-Centred Ecology

Fisheries management also requires an understanding of the internal dynamism of fishing communities. The starting point for this analysis is the people of the Phru, and the ways in which they interact with and interpret their physical environment. This thesis aims to facilitate understanding of local patterns of resource use in a complex physical and socio-economic environment. There is great diversity in local interpretations of the Phru, and in local resource use patterns. People interact with their environment in different ways, as revealed in local resource use strategies (see chapter six). Consequently there is a wealth of detailed local knowledge of the environment of the Phru. However, as wider socio-economic forces become increasingly significant, local interpretation and practice is not solely determined by people's relationship with their environment.

The diversity of resource use occurs both within and among households. Within the household in the Phru there is a clear division of labour, particularly in the cases of weaving *grajut* mats and working on urban construction sites. The former is an exclusively female activity, while the latter is largely male. For the poorer sections of the Phru both these activities are the main sources of cash income. Clearly involvement in mat making or building work gives individuals different perspectives on the Phru environment, but also on notions of community, place and economy. In

many households, men are absent for large parts of the year. It is the women who maintain the cultural continuity of the household by raising children, and ensuring continued residence in the Phru. Their interests in the environment of the Phru are largely in terms of *grajut* production, rather than say, rubber production. For male migrant workers, the Phru is now a temporary residence that can only support them at particular times of the year. One of the most important times of year for male migrant workers is the flood season. This is the time of year when building work is less plentiful, but also when the peak fishing season allows them to earn a living in the Phru. In fact it is the time of year when earning a cash income in the Phru is most viable. In 1995 the poor catch in the fishing season made a return to the village more difficult, and even encouraged non-migrants to find work in the cities. Previously concerns for the fishery had been ameliorated by a confidence in the availability and profitability of migrant work. Fishing gradually became of less economic importance. However, the combined effects of a marked decrease in catch as well as the slump in building work in 1997 has made this strategy less viable.

The diversity in interpretations and interactions with the fishery can be explained by considering the significance of fishing within the dynamics of household resource profiles (cf. Lewis and McGregor 1992). Fishing is one of a number of resource uses in the Phru and is carried out in different ways, with varying degrees of intensity (see chapters six and seven). The importance and perception of fishing is partly influenced by the availability and economic benefit derived from other activities and arenas of resources. For example, the need for subsistence fishing is reduced if cash-earning activities are possible and which allow people to buy fish (or other meats) from market traders. For those with access to relatively lucrative activities (viz. rubber) the decline in the fishery is not a major concern. For those who do not have such 'room for manoeuvre' (cf. Clay and Schaffer 1984) and whose economic concerns are not being addressed by state management initiatives, the decline of the fishery is of much greater importance. Not only does it threaten their economic security, but also their capacity to continue residence in a rural community.

Local knowledge is not incorporated in the planning process for the Phru. Environmental degradation has been a mechanism for increased state intervention. Much of this intervention has been in the form of restricting local resource use activities. This is most evident in the establishment of the Thale Noi Non-hunting Area. The blame for this degradation is largely attributed to local practice. Local explanations are more diverse. In terms of the fishery, a common local belief is that

the decline is more a result of degradation of natural resources (*thammachaat sia leow*), even when the material environment is considered to have improved (*singwaetlom dii kheun*). Recently published academic research presents an authoritative discourse which seems to support widely held local perceptions of the fishery (see Heady et al 1995). In particular, the research challenges the established perception of maximum sustainable yield, and suggests that environmental factors have played a more significant role in declining fish yields than issues such as overfishing. This is an important conclusion as it not only confirms local perceptions, but also contradicts official thinking towards the fishery of the Phru. It also indicates that local knowledge only gains a semblance of legitimacy when it is translated into a more formal and scientific discourse.

9.iii Multiple Resource Use and the Influence of Community, Market and State

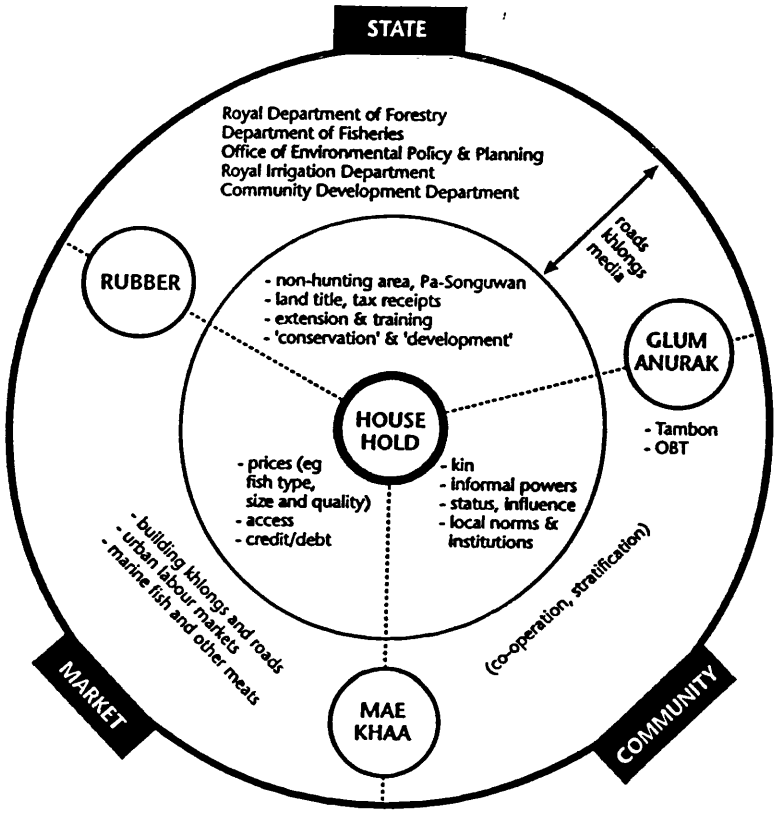
Natural resource management tends to focus on natural resources at the expense of a range of other material, cultural and political resources. While access to material resources is clearly significant, the case of the Phru Khuan Khreng also illustrates the importance of 'resource profiles' (Lewis & McGregor 1992), including cultural and political resources. This set of resources can include such things as kinship connections, influence, status, and cultural expectations. These resources can determine access to productive material resources, as well as being productive resources in their own right. As has been discussed, kin connections, often transcending village boundaries, can allow access to a range of resources including labour, land, credit and employment opportunities.

Resource profiles must also be placed in their socio-economic context. Patterns of local resource use are not solely determined by their 'natural' environment. The wider social arenas in which resources are extracted and exchanged, and in which resource users operate, are also influential. These are presented in this thesis as the arenas of community, market and state. By taking individuals and households as the starting point for this research it is possible to examine the internal dynamism of communities in which people operate, and how patterns of resource use influence patterns of community organisation. This approach derives from McCay's (1978) 'people-centred ecology' and Long's (1992) calls for an 'actor-oriented' methodology.

The following schematic is developed from the model applied in the ODA fisheries project (see chapter two, page 42). It portrays households at the centre, surrounded

by the overlapping arenas of community, market and state. It is designed to indicate how these arenas influence local resource use patterns. It also aims to illustrate how policy can affect local resource use through each of these arenas of community, market and state. This can be illustrated by examining local patterns of fishing.

People-Centred Ecology of Phru Khuan Khreng



There are a number of ways in which the community influences local resource use patterns. For example, access to fishing grounds, and the types of fishing gear employed are both partly determined by community norms. Thus in the Phru there are several local management regimes. For example, some areas are common grounds while others can be privately 'owned'. People are able to claim exclusive usufruct rights over fishing grounds, even if such fishing grounds cannot be legally owned, as in the *paa so-nguan* (reserve forests). Gear selection is also influenced by community norms. For example, the use of small mesh gill-nets is also partly restricted by community prohibition. Of course individuals and households can also shape or evade these community norms. As the fieldwork material has illustrated those with influence are sometimes able to break community (and state) prohibitions on the use of certain gears.

The diversity in perceptions and practice of fishing can also mould perceptions of community and shared interest. For example, many people attributed the poor catch of 1995 to the high yield from the *bor lor*. Not all of those who fish in the flood season use *bor lor*. Indeed *bor lor* is classified as a distinct form of fishing, and not as a form of *haa plaa*. This caused divisions and alliances between and among villages, even though there was some general alliance between the villages of Baan Paa Sombuun and Baan Glaang Phru against fishers from Thale Noi (see chapter seven).

In the last fifteen years the market has had greater influence on local patterns of fishing. This is most evident in the species of fish caught, and the type of gear used. The most heavily fished species (snakehead, catfish and eels) are those that fetch the highest market price. Markets also favour large, live specimens of these fish. As a result local fishers tend towards such gear as traps, hooks and *bor lor*. However, in the flood season a large volume of damaged fish can compensate for a lower price per kilo so that gill nets are a viable choice of gear in the flood season. The damage that gill nets cause the fish they catch can be offset by drying and fermenting the fish in order to obtain a higher price per kilo.

The market has had a greater influence on local fishing practice with greater physical accessibility. The building of roads and *khlongs* has made travelling to market more possible, and has allowed for greater trading. Some of these traders are locals, represented in the schematic as a circle (*mae khaa*) joining community and market. Trading is now perceived to be one of the most lucrative economic activities, but is itself dependent on the existence of a local cash economy. Access to market has also allowed for other cash-earning activities, particularly construction work. This has in turn increased the opportunity cost of labour in fishing, and drawn many away from the fishery. The converse of this is that a decline in labour markets may well increase the economic attraction of fishing. Roads, *khlongs* and markets have also brought in alternative fish and meat products, as well as consumer goods. This has created a desire for cash income which in turn has affected the economic viability of fishing relative to other activities. The cash economy has also affected local sense of community and has been a powerful incentive to migration (cf. Masae 1996). Rubber production has become one of the main sources of wealth and social stratification. It has been taken up as a result of state extension and favourable market conditions.

State intervention in the Phru has been relatively recent. Despite the establishment of the Thale Noi Non-hunting Area state ownership of reserve forests is not locally recognised as regards fishing. Neither are national fishing regulations enforced, except when they happen to coincide with local norms. The district and provincial DOF have had very little involvement in the Phru. Their main activity in the Phru, the Special Project, has in fact seriously undermined their credibility. However, the state is an increasingly influential player in the Phru if not directly with regards to fishing. Under the banner of conservation and development the Departments of Forestry, Irrigation and Fisheries and others are becoming increasingly evident in the lives of people in the Phru. The establishment of the Non-hunting Area and the *glum anurak*, the building of roads and *khlongs*, and the provision of electricity are all manifestations of the state. Or in the case of Baan Paa Sombuun, manifestations of the failings of the state. Large scale projects such as the RID reservoir project not only bring the state in the form of government official more directly into people's lives. They also have generated numerous publications, television and radio programmes, and meetings presenting a project in terms of its beneficial effects on fishing and *grajut*. Currently there is a great deal of discussion among local people about the possible environmental and economic effects of this project.

The *glum anurak* are an important local manifestation of state involvement in the Phru. The RDF are attempting to increase their influence in the management of the Phru as part of the Thale Noi Non-hunting Area. In doing so they are competing against other government departments, and are attempting to present the 'nature' of the Phru as a forest and waterbird habitat. They are also attempting to enforce their management regime through sub-stations of the *glum anurak*, as in the case of Baan Glaang Phru. Historically the role of the *glum anurak* has been to impose a environmental conservation (*gaan anurak singwaetlom*) regime that portrays the Phru primarily as a waterbird park, and which restricts local subsistence (*haa gin)* activities.The hunting of animals, chopping of trees and production of charcoal have all been prohibited, although these activities do still continue. While the general concept of conservation is more accepted by locals, there remains some tension as to the extent to which conservation should restrict local resource uses and ownership of local resources.

The *glum anurak* form an intriguing link between local people and the RDF. As state intervention increasingly comes under the rhetoric of conservation of the environment (*anurak singwaetlom*), the *glum anurak* are often the point of contact between the state and the people. Working for the *glum anurak* is a potential source

of political influence as well as employment. In the schematic the *glum anurak* are thus presented as overlapping community and state. The *glum anurak* are able to represent local interests, but clearly do not speak for the people of the Phru as a whole. The close kin connections among the *glum anurak* represents a potential power base for particular local interests.

The purpose of this schematic is to present a way of organising interrelated issues, and illustrating linkages. It aims to illustrate the significance of multiple resource use and dynamic resource profiles, and the influence of community, market and state in shaping patterns of local resource use . An essential feature of life in the Phru is that of adaptation (cf. McCay 1978). Adapting has been a constant and necessary feature of livelihood strategies in the Phru. People, even when disadvantaged, are able to effect change for themselves as well as to respond to external change. But there are obviously restraints. The model that this thesis has presented is of people operating within a physical and a socio-economic environment. The one can not be understood without the other. From the experiences of the early settlers of Baan Paa Sombuun the interweaving influences of the physical and socio-economic environment are revealed. Driven by debt and shortages of productive land these settlers established themselves in a harsh but potentially abundant environment. In order to plant the familiar crop of rice large tracts of forest were cleared. When these lands were no longer productive for rice cultivation they were used for rearing buffalo. At the same time residents of Baan Paa Sombuun have needed to adapt to the influences of the state in its conservation, forestry and fisheries policy. However, as the fieldwork material has revealed, people in Baan Paa Sombuun are quite able and willing to by-pass state authority and legislation, although this is clearly becoming more difficult. They have also been able to generate 'development' for themselves; in the use of *bor lor plaa*, in communal grazing activities, and in the planting of village vegetable plots. These processes of adapting are continuing.

The schematic also represents how policy can be targetted at the levels of community, market and state in order to influence local resource use. The people of the Phru are increasingly having to adapt in the context of the influences of community, market and state. This will become even more apparent as the Phru becomes the target of state-led conservation and development policy.

9.iv Policy, Science, and Argument

Policy is a specific way of interpreting the world. It is based on the identification of a problem, a solution and a course of action (see Apthorpe 1984). It is thus important to consider which interpretations gain legitimacy, and whose interests they serve (cf. Wood 1985). In order it be implemented, policy requires knowledge and information and the legitimisation of agents, norms and institutions of policy. As authors such as Hobart (1993) argue, policy also implies the imposition of a specific knowledge and worldview. In the field of natural resource management, policy is also about making claims over natural resources.

As a means of revealing an essential nature and its laws, positivist science has a pivotal role in natural resource management (cf. Roling 1994). In the case of fisheries management (usually marine), science has recently come under heavy criticism (Finlayson 1994). In the discourse of the sociology of scientific knowledge, this is for both internal workings of science, as well as to the social and political context in which science operates (see Collins 1985, Pickering 1992). Such fundamental management concepts as the 'maximum sustainable yield' have been based on an understanding of an ordered, clearly defined system that can be maintained in equilibrium. Indeed, Heady et al (1995) argue that in the case of floodplain fisheries, the MSY curve levels off at the sustainable level of effort. The current collapse of many fisheries seriously undermines such a conceptualisation of a fishery. It raises fundamental doubts as to the technical capacity to model a 'system' with no clear boundaries, and seemingly infinite variables (see Finlayson 1994, Yearley 1988). These concerns are just as applicable to a fishery such as the Phru Khuan Khreng. Indeed the extreme environmental change within one year during which time the fish population can be seriously reduced, and then dramatically rejuvenated, present even further challenges (see MRAG 1994). This has led the biologist from the original ODA project has decided to concentrate on more easily identifiable reservoir fisheries, rather than such murky fisheries as that of the Phru Khuan Khreng and Thale Noi.

There is a decisionist approach to policy analysis which argues that incorporating a broad range of perspectives will facilitate the selection of the optimum policy. This is an approach that is evident in the writing of Chambers (1996) and Majōnē (1989). It tends to overlook the processes by which some knowledges are excluded, and how orthodoxy is established. It implies that a broadening of the policy will of itself lead to better policy. This thesis has raised serious doubts as to the capacity to model a

dynamic environment such as the Phru Khuan Khreng. There are many 'natures' in the Phru. Interpretations of the environment in policy are necessarily prescriptive. They are not only concerned with the environment, but with what aspects of the environment should be managed for what ends.

Majone (1989) emphasises the significance of argument, interpretation and presentation in the policy process. He focuses on policy makers, rather than on the constituents of policy. In doing so, he compares policy making with the legal process. Both require the presentation of data and information, and both require evaluation and argument. In order to optimise the policy-making process, he argues that it is necessary to broaden the policy community to be "sufficiently open and competitive so that truly novel variants may emerge" (p.164). This is a decisionist, almost technocratic approach to policy that ignores the ways in which data and information can be interpreted, and how particular interpretations can gain a sense of orthodoxy and legitimacy. There are strong impediments to the broadening of the policy process in Thailand. At the moment, local people's knowledge and interests do not count.

Even among authors who advocate the inclusion of indigenous knowledge (eg. Roling (1994) scientific knowledge continues to exert great influence in natural resource management. For Majone science is to be the final arbiter of policy. Where scientific knowledge is incomplete or unreliable, policy should be based on 'persuasive arguments not formal proofs' (p.5). However, local people often lack the capacity to present either formal proofs or persuasive arguments. But in the case of wetland fisheries, science cannot possibly hope to model the fishery without the involvement of local fishers.

Scientific understanding of the Phru Khuan Khreng is limited and uncertain. State projects are attempting to create particular environments and economies. Yet it is unclear what the effects of such projects will be. Both the environmental impact assessments of the RID Irrigation Project and the Songkhla Lake Barrage are inconclusive, and recommend further scientific study (CORIN 1994, Taylor and Sons 1985). There are important doubts as to the capacity to ever adequately model such complex ecosystems according to a neutral scientific method. This may be true of all complex resource systems, but is especially true of wetland fisheries. The high levels of dynamism and uncertainty, the multiplicity of resource uses and users mean that inevitably there are multiple realities. There are different natures and environments to be shaped by policy. There would therefore seem to be a special

need for incorporating multiple realities and a broadening of the policy community in the management of wetlands, and particularly for wetland fisheries. But this is not just an issue of incorporating multiple perspectives in the policy process. There is an important issue concerning the capacity to reveal an essential nature. This thesis argues that such an approach is itself misleading. Resource users' understanding and practice is as much a part of a wetland fishery as the fish are themselves. Modelling and monitoring the fishery must therefore include local people. It must adopt participatory methods, and allow scope for local people to influence the research and management agenda. If there is to be a meaningful management partnership in the eyes of local people, it must address local environmental concerns. As this thesis has argued, these concerns are not solely environmental. That is to say, they are also concerned with such issues as land rights, poverty, and incomes. While the state might wish to talk about the environment, it tends to be an environment devoid of a rural economy in which the state and its knowledge holds the most influence.

Wetland fisheries such as the Phru Khuan Khreng require particular types of management regimes. The scientific basis of wetland fisheries management is at best incomplete and inadequate for the Phru Khuan Khreng. Management therefore requires the involvement of local people in the policy process. This itself requires a strengthening of rural civil society, as well as institutional reform of the state administration. Rather than attempting large-scale refashioning of the Phru with uncertain results, management should be based on the principles of local resource use patterns ie. of multiple resource use, and small-scale adapting strategies.

GLOSSARY

achiip occupation

amphur district (administrative district)

baan village (home)

bet hook (and line)

blon bandit raid

bor lor plaa refuge trap pond

bueng natural reservoir

bueay rotten

chanot full land title

chumchon community

fai chot electrc shock

kharachagaan government official

gat gill net

gin aeng consumption, subsistance

glum group (circle)

glum anurak Conservation Group (of RDF)

grajut *sedge grass (Lemna minor)*

grajut nuu *Eleocharis ochrostachy Steud*

grom government department

grom paamai Royal Deparmtent of Forestry

grom prámong Department of Fishery

haa plaa to fish (subsistance)

haa gin to find a living

jangwat province

kamnan sub-district headman

khet anurak conservation area

khruang sup mechanical pump

khuan hill/island in Phru

laen eel trap

liang to raise (animal, fish, family)

macro mechanical digger

men stinky

muubaan village (administrative unit)

nakleng hoodlum

nam breow acidic water

nam jeut fresh (non-acidic) water

nam sai clear water

nor sor sam(NS3) form of 'title'

paa forest

paa kheow mixed green forest

phasaa glaang Central (standard) Thai

phasaa dtai Southern Thai

phasaa thong thin local dialect Thai

paa samet melaleuca forest

paa so-nguan reserve forest

phathanaa development

phru swamp forest

phu mii ithiphon 'influential person'

phuu yai man of high status

phuu noi man of low status

phuu yai baan official village headman

piinong cousins, brothers and sisters

plaa fish

por bor tor 5,6 tax certificate

pramong amphur District Fisheries Officer

rai unit of land (0.16 hectare)

rap jang hired labour

reey reey as and when

sai fish trap

singwaetlom environment

suwan orchard

thale lake, or sea

thammachaat nature/natural

tham pramong to fish (as a profession)

wong lao drinking circle

yaang paraa rubber

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